

MATERIALS TOWARD A MONOGRAPH OF THE GENUS VERBENA. X

Harold N. Moldenke

xVERBENA DEAMII Moldenke

In all, 33 herbarium specimens, including the types of all the names involved, have been examined by me.

Citations: ILLINOIS: Coles Co.: Ahles & Gilpin 7455 (Hi--103233). Henderson Co.: H. N. Patterson s.n. [July 1872] (Al), s.n. [near Oquawka, July 17, 1873] (Dt), s.n. [Oquawka, July] (W--491614), s.n. [vicinity of Oquawka] (N, Ur, W--1323063, W--1323123). Wabash Co.: Waite s.n. [Mt. Carmel, Aug. 6, 1887] (Ur). IOWA: Story Co.: C. E. Bessey s.n. [Ames, Aug. 23, 1878] (Ua--11374). WISCONSIN: Pierce Co.: Schuette s.n. [Bay Settlement, July 19, '83] (Du--122875). MINNESOTA: Hennepin Co.: J. H. Sandberg s.n. [Aug. 1889] (Al, Ca--25174, Up--17089, W--71937). Winona Co.: Holzinger s.n. [Winona, July 10, 1888] (Ca--67416). KANSAS: Riley Co.: J. B. S. Norton s.n. [Manhattan, Aug. 1892] (Ka). Wyandotte Co.: K. K. Mackenzie s.n. [Aug. 16, 1896] (N). NEBRASKA: Buffalo Co.: Rydberg s.n. [Kearney, June 20, '95] (N--type), s.n. [Kearney, June 1895] (N). Lancaster Co.: J. L. Sheldon s.n. [June 24, 1899] (We). Nemaha Co.: J. L. Sheldon s.n. [Peru, June 20, 1900] (We). MISSOURI: Greene Co.: Eggert s.n. [Brooklin, 13 July 1879] (Cm, N, W--754199). St. Louis: Eggert 5321 (N), s.n. [Aug. 1886] (Al); Engelmann s.n. [St. Louis, Aug. 1843] (Pr), s.n. [St. Louis, July 1861] (Dt), s.n. [St. Louis, Aug. 1861] (Dt), s.n. [St. Louis, 1861] (Br); M. Martens s.n. (Br). OKLAHOMA: Adair Co.: C. S. Wallis 2385 (St).

VERBENA DELICATULA Mart. ex Zucc. in Otto & Dietr., Allg. Gartenzeit. 2: 243 & 245. 1834.

Synonymy: Verbena delicatula Mart. & Zucc. apud Schau. in A. DC., Prodr. 11: 555. 1847.

Bibliography: Zucc. in Otto & Dietr., Allg. Gartenzeit. 2: 243 & 245. 1834; Schau. in A. DC., Prodr. 11: 555. 1847; Jacks., Ind. Kew. 2: 1178. 1895; Perry, Ann. Mo. Bot. Gard. 20: 342 & 355. 1933; Moldenke, Résumé Suppl. 2: 4, 11, & 15. 1960.

Softly pubescent throughout; stems short, erect; leaves petio- late, broadly cordate-ovate, coarsely serrate, subinequilateral at the base; racemes rather slender; flowers erect; calyx 5- angled, long, the rim 5-dentate; corolla-tube narrow, curvate, the limb rose-colored, the lobes rounded, the upper one smaller.

The type of this virtually unknown species was collected by Freiherr Wilhelm Friedrich von Karwinski von Karwin at Tehuantepec, Oaxaca, Mexico, in moderately warm places. Perry (1933) says "Un-

fortunately the essential characters, which would separate this species from its allies, are not clearly defined. The description is so much like that of V. barbata that the writer suspects that the two species are identical."

VERBENA DELTICOLA Small ex Perry, Ann. Mo. Bot. Gard. 20: 314--315. 1933.

Synonymy: Verbena denticola Small ex Cory, Texas Agr. Exp. Sta. Bull. 550: 88, sphalm. 1937.

Bibliography: Perry, Ann. Mo. Bot. Gard. 20: 248, 311, 314--315, & 355. 1933; Cory, Texas Agr. Exp. Sta. Bull. 550: 88. 1937; Hill, Ind. Kew. Suppl. 9: 294. 1938; Moldenke, Suppl. List Invalid Names 8. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 13, 18, & 101. 1942; Moldenke, Alph. List Invalid Names 46. 1942; H. S. Gentry, Carnegie Inst. Wash. Publ. 527: 221 & 306. 1942; A. M. T. Davis, Study Boscaje Palma 61. 1942; Moldenke in Lundell, Fl. Texas 3 (1): 17, 18, & 35--36. 1942; Moldenke, Phytologia 2: 75, 79, 114, & 128. 1945; Moldenke, Alph. List Cit. 1: 2, 13, 17, 32, 111, 126, 176, 215, 216, 232, & 274 (1946) and 2: 370, 483, 593, & 639. 1948; Moldenke, Wrightia 1: 230. 1948; Moldenke, Phytologia 2: 162. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 23, 32, & 197. 1949; Moldenke, Alph. List Cit. 3: 656, 678, 681, 697, 752, 766, 784, 785, 795--797, 807, 829, 831, 878, 881--883, & 933 (1949) and 4: 990, 1071, 1072, 1075, 1081, 1095, 1111, 1126, 1170, 1171, 1218, 1230, 1240, 1246, & 1290. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 13. 1949; Moldenke, Résumé 29, 39, 363, & 471. 1959; Lewis & Oliver, Am. Journ. Bot. 48: 639--641. 1961; Moldenke, Résumé Suppl. 3: 7 & 10. 1962.

Illustrations: Lewis & Oliver, Am. Journ. Bot. 48: 640. 1961.

Annual or sprawling perennial herb, to 30 cm. tall; stems decumbent or ascending to erect, branched, more or less hirsute; roots fibrous; bark green; leaves ovate-deltoid, 3--7 cm. long, with a truncate or truncate-cuneate base narrowed into a margined petiole, obtusish or subacute at the apex, coarsely serrate-dentate, often 3-lobed, usually thin-textured, sparsely appressed-hirsute on both surfaces, the hairs often with minute bulbous bases on the upper surface; spikes pedunculate, fascicle-like during anthesis, becoming elongate in fruit; bractlets linear-attenuate, shorter than or equaling the calyx; flowers showy, odorless or fragrant with a faint odor; calyx 7--8 mm. long, sparsely glandular, hirsute, its lobes slender, subulate, unequal; corolla showy, varying from red or almost red, pink, rose, rose-pink, deep-pink, bright magenta-pink, pink-red, pink-purple, bright pink-purple, rose-purple, or red-purple to purplish, purple, deep-purple, violet-purple, deep pinkish-lavender, lavender-blue, light-violet, or violet, sometimes pink-lavender with a whitish "eye" or "fuchsia-color", its tube 1--1.5 cm. long, protruding well beyond the calyx, pubescent or glabrate on the outside, the limb 7--10 mm. wide, the lobes emarginate; cocci about 3 mm. long, subcylindric, reticulate from

the apex to the definitely broadened base, the commissural faces practically reaching the tip of the cocci, muricately scabrous; chromosome number: $n = 15$.

The type of this species was collected by Roxana Judkins Ferris and Carl Dudley Duncan (no. 3161) at Las Palmas Ranch, in the vicinity of Brownsville, Cameron County, Texas, between August 1 and 5, 1921, and is deposited in the Britton Herbarium at the New York Botanical Garden. In southern Texas the species is said to grow in sandy soil, clay, loam, or sandy clay loam, in open grounds, fields, or orchards, or at the edge of thickets, often covering acres of ground, blooming from February to August on the Rio Grande plains from Maverick to Cameron Counties. Runyon says that his "original" collection of this species was no. 630, not as yet seen by me, and that the species is frequent to abundant in early spring "throughout this region" and "throughout Cameron County", forming large colonies, covering small or large areas. He says that it is "abundant throughout the [Rio Grande] valley" in that county. Clover reports that in Hidalgo County it "covers acres of ground". Gentry asserts that it is only "casual and scattered on milpas in the Lower Sonoran zone" in Sonora. Leavenworth found it on limestone bedrock covered in spots with tufa in Nuevo León, where Mueller reports it as "rare on sand bars at edge of rivers" and Thompson found it "in red sandy clay soil on rocky mountainside in dense oak-pine woods" and Weaver found it in "loose sandy soil near rivers". Buchholz, however, says "common in region" [Nuevo León].

Collectors have found it in sand, sandy loam, sticky black soil, limestone soil, clay soil, and alluvial soil, growing on rocky hillsides, gravelly slopes, basaltic hills, road-cuts, and unwooded sandy hillsides, near brooks and ponds, in limestone canyons, pine woodlands, clearings, open grounds and fields, orange orchards, open valleys, roadside ditches, open low pastures, arroyos, and thorn forests on volcanic cerro slopes, at the edge of thickets, among grass, and along roadsides, at altitudes of 10 to 2000 meters. It has been collected in anthesis and fruit in every month of the year. Gentry asserts that the species in Sonora inhabits sandy adobe soils in valley margins of the Short-tree Forest area in the foothills. Johnston found it in "openings in dense brush on tight clay" and with Davis in "clearings in dense brush on fine tight clay along arroyos".

It is mentioned by Anna May Tarrence Davis in her thesis "A study of Boscaje de la Palma in Cameron County, Texas, and of Sabal texana" (August 1942). Common names recorded for it are "alfombrilla", "bartunicha", "kamiyo", and "moradia".

Specimens have been misidentified and distributed in herbaria under the names V. ambrosifolia Rydb., V. aubletia Jacq., V. aubletia L., V. bipinnatifida Nutt., V. canadensis Britton, V. ciliata Benth., "V. sp. aff. V. ciliata", V. ciliata var. longidentata Perry, V. elegans H.B.K., V. elegans var. asperata Perry, V. gooddingii Briq., V. gooddingii nepetifolia Tidestr., V.

gooddingii var. nepetifolia Tidestr., V. lambertii Sims, V. pumila Rydb., and V. quadrangulata Heller.

On the other hand, the R. M. King 3983, Liebmann 11313 & 11314, Nealley 117, Edw. Palmer 90, R. Runyon 1943, and J. N. Weaver 667 annotated as V. delticola by Perry and cited by her or so identified and distributed, are all V. cameronensis L. I. Davis; G. L. Fisher 45198 is V. elegans var. asperata Perry; and J. N. Weaver 1033 is V. pumila Rydb. The Edw. Palmer 1045 annotated by Perry as "Aff. V. delticola Small" is V. quadrangulata Heller and the Edw. Palmer 34, similarly annotated, is V. andrieuxii Schau.

The E. W. Nelson 6028 and Edw. Palmer 39 in the Britton Herbarium are anomalous in appearance and may actually not belong here. Frye & Frye 2310 has much the aspect of V. gooddingii var. nepetifolia.

L. Irby Davis, in a letter to me dated July 28, 1941, says "I am at present interested in studying the variations in V. delticola Small. There are certain features in specimens from the type locality (some of which can be observed usually only in fresh material) which I find are not present in specimens called V. delticola from E. San Luis Potosí and S. Tamaulipas. Also I feel sure that there are at least two species in San Luis Potosí that are usually identified as V. delticola. There are seasonal, calendar and habitat variations in V. delticola in my home county which make it easy to study the species."

The Ecology Class Univ. Texas s.n. cited in Lundell, Fl. Texas 3 (1): 36 (1942) as V. delticola is actually V. cameronensis L. I. Davis. Similarly, the Nealley 117 and 118 and Edw. Palmer 90 [insofar as seen by me], cited by Perry (1934) as V. delticola, are actually V. cameronensis.

Miss Perry cites the following 15 additional specimens not as yet examined by me: TEXAS: Cameron Co.: Ferris & Duncan 3161 (E-isotype). MEXICO: Nuevo León: Arsène 6129 (E, G); Gregg 202 (E), 752 (E); Edw. Palmer 1051 (G); Pringle 2228 (G), 11843 (G). Tamaulipas: E. W. Nelson 4424 (G), 6628 (E, G); Edw. Palmer 39 (E, F, G). Vera Cruz: Ervendberg 236 (G). She says "Superficially, this species bears a strong resemblance to V. canadensis, but usually the leaves are not so deeply incised. Its distinctive character is found in the nutlet. Commonly, in the section Glandularia, the schizocarp is shallowly lobed at the apex; hence, the style appears to be attached in a very definite depression and ordinarily the commissural face does not reach the tip of the nutlet. In V. delticola, however, the depression is indefinite, the commissural face practically reaches the tip, and the separate nutlets viewed from the lateral or ventral surface suggest a tendency toward developing a beak. In Safford 1221 a small beak is present." The Liebmann 11313 & 11314, Nealley 117, and Edw. Palm-

er 90 which she cites are V. cameronensis. She has annotated E. Stearns 104 as V. ambrosifolia Rydb., but I do not think that it belongs there. Instead, I am citing it as V. delticola -- its leaves do not look like those of V. delticola, but its flower spike does. Of Mearns 591 she says "Cf. Verbena ambrosifolia Rydb.", but, again, I doubt that it is that species. E. W. Nelson 6628 has two labels on the sheet which originally indicated its number as "6028".

In all, 129 herbarium specimens, including type material of all the names involved, and 1 mounted description have been examined by me.

Citations: TEXAS: Cameron Co.: Cory 28301 (N), 28302 (Ur); L. I. Davis s.n. [Olmiteo, Dec. '41] (Au--122061), s.n. [4 miles southeast of Rangerville, December 2, 1945] (Au--171995); Davis & Johnston 53253.21 (Au--122065); Ferris & Duncan 3161 (Du--125424--isotype, Gg--31467--isotype, N--type); H. C. Hanson 466 (W--982824); Hotchkiss 6184 (Ar--219537); M. C. Johnston 54150 (Au--122066, St, St); F. L. Lewton 141 (Ar--271586, W--56209); C. L. Lundell 10680 (N, Rf, Rf, W--1926930), 10758 [South. Appal. Bot. Club 17th Distrib. 1647] (Hi--148547, Hi--158540, N, N, Rf, Rf, Rf, We); Lundell & Lundell 10018 (Ld, N, W--1888877); H. B. Parks 2936 (Wi, Wi, Wi), 2937 [Cameron Co.] (Wi, Wi); Parks & Cory 17935 (Tr); R. Runyon 327 (Au--122062, Au, W--1222821), 1781 (Rr, Rr), 1943 (N, Rr), 2182 (Rr), 2363 (N, N, N, N, N, N, N), 2587 (N, N, N, N, N), 2693 (N, N), 3942 (N); I. Shiller 334 (W--1812047); Small & Wherry 11901 (N). Hidalgo Co.: L. H. Bailey 7431 (Ba); Clover 106 (Fs, Gg--233345), 566 (Fs, Me); L. H. Hooker 5999 (W--1468812); Lundell & Lundell 9802 (Ld, N), 9804 (Ld, N, W--1888831), 9828 (Ld, N), 9979 (N); Molby 7224 (W--1465434); H. B. Parks 2937 [Mission] (Wi); Tharp 5999 (Au--122063); Uzzell 69 (Au--122064, N). Maverick Co.: Parks & Cory 12422 (Tr). Willacy Co.: M. C. Johnston 53253.14 (Au--122024). MEXICO: Chihuahua: E. Stearns 104 (W--502848). Coahuila: E. G. Marsh 1184 (St), 1592 (St), 2147 (St). Nuevo León: Abbon 19 [Arsène 6129] (N, Ur, W--1003536); Arsène s.n. [Monterrey, 5-1911] (B, N); F. A. Barkley 14361 (Au); Barkley, Webster, & Rowell 7131 (Au--123274, N); J. T. Buchholz s.n. [Feb. 23, 1936] (Ur); L. I. Davis s.n. [Teran, March 4, 1959] (Au--171918); Herb. Inst. Biol. Univ. Nac. Mex. 7138, in part (Me); Johnson & Barkley 16129M (Au); W. C. Leavenworth 119 (Ur); Lewis & Oliver 5419 (Nb); C. H. Mueller 2058 (Mi); Mueller & Mueller 158 (Me); Oldendorf & Oldendorf s.n. [April 23, 1934] (Ok--16316); C. R. Orcutt 1191 (W--1207770); Edw. Palmer 1045 (W--1323077), 1051 (Pa, W--56180); F. W. Pennell 16844 (D--733978, Me, Me, W--

1640274); Pringle 2228 (Me), 11843 (Ca--168341, Gg--421278, Mi, Mi, St, Vt, W--462591, W--1586430); Rowell, Lind, & Barkley 16M584 (Au); Safford 1221 (W--573262); Tharp 1826 (W--1203121); W. M. Thompson 258 (Au--167418); J. N. Weaver 562 (W--2134143), 1033 (N); S. S. White 24 (Mi), 1539 (Mi), 1576 (Mi). Puebla: Goldman 42 (W--324807). San Luis Potosí: Graber 183 (W--2085422); Edw. Palmer 34 (N). Sonora: R. J. Ferris 8770 (W--1686987); Frye & Frye 2264 (W--1790984), 2310 (Du--285440, Rs--25552, W--1790989); H. S. Gentry 356m (Ak--20069, Mi), 1312 (Ak--19968, Ca-646402, Fs, Ge, I, Me, Me, Mi, N, N, S, S), 1313, in part (Ge), 7942 (Ak--22061); Shreve 6081 (Fs); S. S. White 708 (Mi), 774 (Mi), 3787 (Mi); Wiggins 6102 (Du--215932), 6288 (Ca--590450, Mi, W--1739922), 7225 (Mi). Tamaulipas: H. H. Bartlett 10127 (Mi), 10170 (Mi), 10985 (Mi), 11133 (Mi); LeSueur 400 (Au, Fs); Lewis & Oliver 5420 (Nb), 5421 (Nb); E. W. Nelson 4424 (W--330977), 6028 (N), 6628 (W--347257), s.n. [May 1898] (W--203186); Edw. Palmer 39 (Ca--145872, Cp, N, W--572267), 90, in part (Cb); Stanford, Lauber, & Taylor 2100 (Du--366279, N, N); Viereck 957 (W--1687466). Vera Cruz: MacDaniels 454 (Ba). State undetermined: Mearns 591 [San Bernardino ranch, Mex. bound. line] (W--591720); Née 79 (Q). MOUNTED DESCRIPTION (N).

VERBENA DELTICOLA f. LILACINA L. I. Davis in A. M. T. Davis, Study Boscaje Palma 62 [as "lilaciana"]. 1942; Moldenke, Known Geogr. Distrib. Verbenac. Suppl. 1: 2 & 4. 1943.

Bibliography: A. M. T. Davis, Study Boscaje Palma 62. 1942; Moldenke, Known Geogr. Distrib. Verbenac. Suppl. 1: 2 & 4. 1943; Moldenke, Phytologia 2: 128. 1945; Moldenke, Alph. List Invalid Names Suppl. 1: 23. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 23 & 197. 1949; Moldenke, Résumé 29, 363, & 471. 1959.

This form is said to differ from the typical form of the species in having lavender corollas.

The type of the form was collected by L. Irby Davis on the banks of Resaca del Rancho Viejo, Cameron County, Texas, in May, 1942, and is deposited in the herbarium of the University of Texas at Austin. In view of the great variability in the color of the corolla as reported by collectors for the typical form of the species, I strongly doubt the practicability of maintaining this form except for horticultural purposes if/when the species becomes a horticultural subject. It is possibly a similar case to the lilac "form" of V. cloverae Moldenke. Mr. Davis, however, says "there must be a thousand pink-flowering plants of V. delticola to one of the lavender form. It seems to be a mutation that is likely to happen anywhere though and once it occurs is likely to spread locally. Although this color form is sometimes found mixed up with masses of V. ciliata var. longidentata plants, it

is just as likely to be found where there are no V. ciliata varieties for miles around."

It should be borne in mind that in many cases where a series of colors, tints, and shades is given in the description of the flowers of a species, these are taken from notes by collectors on their labels and may in part, at least, merely reflect the different color concepts of the collectors, some of whom may be partially or wholly color-blind. It is very possible that if a single person were to observe all the specimens in question at the time of their collection not nearly so many colors would be recorded. Therefore, the corolla-color may in many cases be far more uniform than these notes would indicate.

VERBENA DEMISSA Moldenke, Phytologia 3: 286, nom. nud. (1950) and 4: 183. 1953.

Bibliography: Moldenke, Phytologia 3: 286 (1950) and 4: 183. 1953; Moldenke, Biol. Abstr. 27: 1887. 1953; Moldenke, Mem. N. Y. Bot. Gard. 9: 177. 1955; G. Taylor, Ind. Kew. Suppl. 12: 149. 1959; Moldenke, Résumé 80 & 471. 1959.

Prostrate or sprawling perennial herb with heavy woody roots and many stems issuing from the crown; stems and branches numerous, slender, rather acutely tetragonal, decumbent or ascending, often closely appressed to the ground, minutely strigillose with tiny widely scattered hairs or glabrate; nodes annulate, often marked with a band of denser, whitish, spreading hairs; principal internodes much abbreviated, to 2 cm. long, usually much less; leaves decussate-opposite, subsessile or short-petiolate; petioles filiform, about 1 mm. long, white-pilose on the margins with sharp-pointed ascending hairs; leaf-blades chartaceous, rather uniformly dull-green on both surfaces, elliptic in outline, 5--14 mm. long, 2--7 mm. wide, incised-dentate from the widest part to the acute apex, cuneately narrowed to the base, more or less sparsely white-strigose above, white-pilose or substrigose along the venation and margins beneath; midrib and the 2 or 3 pairs of ascending secondaries usually subimpressed above and prominulous beneath; veinlet reticulation indiscernible on both surfaces; inflorescence terminal, spicate, elongate, loosely many-flowered, 2--10.5 cm. long, erect; peduncles filiform, 5--7 mm. long, glabrate or very minutely scattered-pilosulous; rachis filiform, glabrous or very minutely and obscurely scattered-pilosulous; flowers imbricate during anthesis only; calyx cylindrical, about 2 mm. long, strigillose on the ribs; corolla very small, deep-blue to light- or pale-blue, pale-lavender, or almost white, hypocrateriform, its narrow-cylindric tube about 2 mm. long, the limb 1--1.5 mm. wide; fruiting-calyx somewhat divergent, not imbricate, not enlarged, minutely strigillose; cocci 4, about 1.8 mm. long.

The type of this species was collected by Wendell Holmes Camp (no. E.2510) in the Parroquia Luis Cordero near the village of San Marcos, 5--8 km. northeast of Azogues, Cañar, Ecuador, on April 1, 1945, and is deposited in the Britton Herbarium at the New York Botanical Garden. The collector notes that the plant is

sometimes used as a fever cure and is called "verbena echada" [i. e., thrown-down verbena]. It has been found among weedy vegetation in hard gravelly soil, at an altitude of 2550 meters, blooming in February and September.

In all, 6 herbarium specimens, including the type, have been examined by me.

Citations: ECUADOR: Azuay: Asplund 17801 (S, S); W. H. Camp E.1851 (N, W--2056952); Giler 31 (N). Cañar: W. H. Camp E.2510 (N--type). Province undetermined: L. Fraser s.n. (Bm).

xVERBENA DERMENI Moldenke, *Phytologia* 2: 148. 1946.

Synonymy: Verbena hispida x bonariensis Dermen, *Cytologia* 7: 163, 164, 165, 170, 171, & 175. 1936. Verbena dermenii Moldenke in Chittenden, *Roy. Hort. Soc. Dict. Gard.* 4: 2210, sphalm. 1951.

Bibliography: Dermen, *Cytologia* 7: 163, fig. 18, 164, 165, fig. 28 & 29, 170, 171, & 175. 1936; Moldenke, *Phytologia* 2: 148. 1946; A. L. & H. N. Moldenke, *Pl. Life* 2: 56. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 164 & 197. 1949; Moldenke, *Phytologia* 3: 289. 1950; Moldenke in Chittenden, *Roy. Hort. Soc. Dict. Gard.* 4: 2209 & 2210. 1951; Moldenke, *Am. Midl. Nat.* 59: 345-346. 1958; Moldenke, *Résumé* 115, 118, 223, 359, 366, & 471. 1959; Moldenke, *Résumé Suppl.* 3: 37. 1962.

Illustrations: Dermen, *Cytologia* 7: 163, fig. 18, & 165, fig. 28 & 29. 1936.

This name has been proposed for the hybrid produced artificially in Massachusetts in 1936 by Dermen between V. hispida Ruiz & Pav. and V. bonariensis L. It is named in honor of Haig Dermen, contemporary Armenian cytologist and geneticist, born in Turkey and later research associate at the Arnold Arboretum in Jamaica Plain, Massachusetts.

The hybrid has been found nine times already in the wild and I am certain that it occurs commonly where the ranges of the two parental species overlap, as in São Paulo, Brazil, in Paraguay, and in at least two provinces of Bolivia, two provinces of Chile, and 9 provinces of Argentina. It seems very probable to me that some, at least, of the more or less "anomalous forms" of V. brasiliensis Vell. and of V. litoralis H.B.K. found in herbaria actually represent this hybrid, because its general appearance is much like that of a slender-spiked V. brasiliensis or a dense-spiked V. litoralis.

It is described by collectors as a suffrutescent herb, 0.5-1 m. tall, with blue or lilac-blue corollas. It has been collected at altitudes of 1400 to 3900 meters, in flower in January, February, April, and May, and in fruit in January and May. It is said to inhabit roadsides and swamps. Its characters are more or less intermediate between those of the two parents. It may be distinguished from V. hispida by the fact that its bractlets equal or but slightly surpass the calyx, and from V. bonariensis by its non-clasping leaves and more elongate pedunculate spikes

which are solitary or in open panicles. Herbarium material has been misidentified and distributed under the names V. bonariensis L., V. bonariensis var. longibracteata Kuntze, and V. littoralis var. caracasana Kunth. The Morong 1540 collection appears to be a mixture, because the Columbia University Herbarium specimen of this number is definitely V. bonariensis.

In all, 12 herbarium specimens and 4 mounted photographs have been examined by me.

Citations: BOLIVIA: La Paz: Asplund 3565 (S, Us); M. Bang 204 (C); Buchtien 4459 (W-1177980), 5530 (W-1159359); Mandon 523 (Bm); H. H. Rusby 707 (C). PARAGUAY: Hassler 3853 (Ca-944363); Morong 1540, in part (W-1416724); T. Rojas s.n. [Herb. Osten 18192] (F-photo, N, N--photo, Sg--photo, Ug, Ug, Z--photo).

VERBENA DISSECTA Willd. ex Spreng. in L., Syst. Veg., ed. 16, 2: 750. 1825 [not V. dissecta Morong, 1904, nor Poepp., 1847, nor Schau., 1959, nor Walp., 1849].

Synonymy: Shuttleworthia dissecta (Spreng.) Walp., Repert. Syst. Bot. 4: 12--13. 1845. Shuttleworthia dissecta Walp. ex Schau. in Mart., Fl. Bras. 9: 194, in syn. 1851. Shuttleworthia dissecta (Willd.) Walp. apud Moldenke, Lilloa 6: 327, in syn. 1941. Verbena laciniata Kuntze ex Moldenke, Suppl. List Invalid Names 9, in syn. 1941 [not V. laciniata Briq., 1960, nor (L.) Briq., 1904, nor (Lam.) Briq., 1939, nor Sessé & Moc., 1940]. Glandularia dissecta (Willd.) Schnack & Covas, Darwiniana 6: 475. 1944. Verbena dissecta Augusto, Fl. Rio Grande do Sul 217, sphalm. 1946. Verbena botryoides Juss. ex Moldenke, Alph. List Invalid Names Suppl. 1: 22, in syn. 1947. Verbena chamaedryfolia x erinoides Osten ex Moldenke, Alph. List Invalid Names Suppl. 1: 23, in syn. 1947. Glandularia dissecta Ragonese, Revist. Invest. Agric. 5: 83, sphalm. 1951. Verbena chamaedrifolia x erinoides Osten ex Moldenke, Résumé 361, in syn. 1959. Verbena erinoides Auth. ex Moldenke, Résumé 363, in syn. 1959 [not V. erinoides Chod., 1904, nor Hook., 1959, nor Hook. & Arn., 1959, nor L., 1959, nor Lam., 1791, nor Poepp., 1847, nor Spreng., 1830, nor Willd., 1947]. Verbena dissecta Spreng. ex Moldenke, Résumé 363, in syn. 1959.

Bibliography: Spreng. in L., Syst. Veg., ed. 16, 2: 750. 1825; Walp., Nova Act. Acad. Nat. Caes. Leopold.-Carol. Cur. 19: Suppl. 1: 379. 1843; Walp., Repert. Syst. Bot. 4: 12--13 & 33. 1845; Schau. in A. DC., Prodr. 11: 551 & 552. 1847; C. Gay, Hist. Fis. Chile Bot. 5: 10. 1849; Schau. in Mart., Fl. Bras. 9: 193--194. 1851; Weddell, Chloris Andina [Castelnau Exped. Bot.] 2: 156. 1861; Morong, Britton, & Vail, Ann. N. Y. Acad. Sci. 7: 197. 1892; Jacks., Ind. Kew. 2: 895 & 1178. 1895; Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 296--297. 1904; Reiche, Fl. Chile 5: 292. 1910; Herter, Florula Urug. 105. 1930; L. H. & E.

Z. Bailey, Hortus, new rev. ed., 632. 1935; Troncoso, Darwiniana 3: 483—486, fig. 2 & 3 g--n. 1939; Moldenke, Carnegie Inst. Wash. Publ. 522: 150. 1940; Moldenke, Prelim. Alph. List Invalid Names 56. 1940; Moldenke, Lilloa 6: 327—328. 1941; Moldenke, Suppl. List Invalid Names 9. 1941; Schnack, Anal. Inst. Fitotéc. Sta. Catalina 4: 19 & 20. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39—42, 44, 74, & 101. 1942; Moldenke, Alph. List Invalid Names 40 & 48. 1942; Moldenke, Lilloa 8: 429. 1942; Rosengurtt, Estud. Prad. Nat. Urug. 3: 235 & 236 (1943) and 4: 8. 1944; Moldenke, Lilloa 10: 383—384. 1944; Covas & Schnack, Revist. Argent. Agron. 11: 94 & 97. 1944; Schnack & Covas, Darwiniana 6: 471, 473, & 475 (1944) and 7: 71 & 73. 1945; Moldenke, Holmbergia 4: 151. 1945; Ind. Taxonom. 1 (14—16): 6. 1945; Cabrera, Bol. Arg. Soc. Bot. 1: 67. 1945; Moldenke, Phytologia 2: 79 & 114. 1945; Rosengurtt, Estud. Prad. Nat. Urug. 5: 394, fig. 36. 1946; Moldenke, Alph. List Cit. 1: 30, 47, 56, 73, 84, 93, 95, 96, 212, 218, 219, & 282. 1946; Augusto, Fl. Rio Grande do Sul 214, 217, & 233, fig. 103. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 9, 22, & 23. 1947; Moldenke, Phytologia 2: 338 & 386. 1947; Moldenke, Alph. List Cit. 2: 355, 364, 367, 375, 378, 426, 442, 458, 479, 533, 534, 599, 629, & 641 (1948), 3: 660, 670, 687, 688, 697, 703, 706, 732, 735, 745, 746, 748, 765, 766, 768, 780, 781, 803, 804, 838, 862, 874, 875, 908, 909, 911, 913, 914, 922, & 963 (1949), and 4: 1013, 1017, 1080, 1087—1092, 1100, 1168, 1172, 1202, 1209, 1211, 1215, & 1302. 1949; Moldenke, Phytologia 3: 135. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 94, 98, 100, 101, 106, 163, & 197. 1949; Cabrera, Lilloa 20: 175. 1949; Castellanos & Ragonese, Lilloa 20: 259. 1949; Moldenke, Revist. Sudam. Bot. 8: 173. 1950; Moldenke, Phytologia 3: 467. 1951; Ragonese, Revist. Invest. Agric. 5: 40, 76, 83, & 208 (1951) and 6: 74, 76, & 206. 1951; Moldenke, Sp. Subsp. Cont. Mold. Set 45 [3]. 1951; Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 6: 2209 & 2210. 1951; Moldenke, Inform. Mold. Set 46 Spec. 4. 1951; E. J. Salisb., Ind. Kew. Suppl. 11: 101. 1953; Rambo, Sellowia 6: 153 (1954) and 7: 260 & 266. 1956; Moldenke, Biol. Abstr. 30: 1093. 1956; Moldenke, Inform. Mold. Set 51 Spec. 4. 1956; Moldenke, Am. Midl. Nat. 59: 356. 1958; Moldenke, Résumé 110, 115, 119, 121, 127, 223, 295, 344, 359, 361—363, 368, 379, & 471. 1959; Moldenke, Résumé Suppl. 1: 7 (1959) and 2: 11 & 12. 1960; Angely, Fl. Paran. 16: 78 (1960) and 17: 46. 1961; Reitz, Sellowia 13 (13): 110. 1961; Moldenke, Résumé Suppl. 3: 32 & 35 (1962), 4: 19 (1962), and 5: 6 & 7. 1962.

Illustrations: Troncoso, Darwiniana 3: 483, fig. 2, & 485, fig. 3 g--n. 1939; Rosengurtt, Estud. Prad. Nat. Urug. 5: fig. 36. 1946; Augusto, Fl. Rio Grande do Sul fig. 103. 1946.

Decumbent or prostrate perennial herb, often grown as an annual, canescent-hirsutulous throughout, stoloniferous; stems subligneous and suffruticose, subcylindric, much branched, mostly decumbent and trailing or creeping at the base, rooting adventitiously at the nodes, densely hirsute; branches ascending or erect, slender, subterete, usually 12—60 cm. tall, occasionally to 1 m. long; principal internodes short, 1—3 cm. long, but on

floriferous stems elongated and 4--6 cm. long; leaves decussate-opposite, ovate, 2.3--4 cm. long, cuneate at the base, gradually attenuated and decurrent into the petiole, broadly tripartite with incised-dentate segments or pinnatifid-laciniate, strigose or hirsute above, spreading-hirsutulous or hirsute with rigid hairs (which are especially dense on the venation and margins) beneath, subrevolute or revolute on the margins, the leaf-segments linear or sublanceolate to linear-oblong, subobtuse at the apex, entire or sometimes toothed; inflorescence terminal, the spikes short, fastigiate, 2 or 3 times trichotomous, very densely many-flowered, corymbiform, often cymose-paniculate, not at all or hardly elongating after anthesis; peduncles short, imparting to the inflorescence the appearance of a dense-flowered umbel; bractlets oblong, 2--4 mm. long, much shorter than the calyx, acute at the apex, densely hirsute or white-pubescent; flowers spreading, not odorous or fragrant with the odor of vanilla; calyx tubular, elongate, 7--8 mm. long, about three times as long as the subtending bractlet, hirsute or densely white-pubescent, with large purple stipitate glands interspersed among the hairs on the angles, the rim unequally toothed, the teeth subulate-aristate; corolla hypocrateriform, varying from blue, bluish, sky-blue, bluish-rose, blue-rose, or pale rose-blue to violet, red-violet, purple-violet, clear-violet, pale-violet, lilac, lilac-red, pale-lilac, clear-lilac, blue-lilac, rose-lilac, red-lilac, or bright purple-lilac, sometimes purple, pink, pale-rose, rose, bright-rose, clear-rose, or even light-red, its tube 10--11 mm. long, slightly longer than the calyx, glabrous below and pubescent above on the outer surface, densely long-pilose within, the limb spreading, pubescent on the outside; stamens typical, the upper ones glandular-appendaged; anther-appendages blackish, cylindrical or narrow-clavate, equaling the mouth of the corolla or somewhat exserted, glandulose; fruiting-calyx turgid, contorted at the apex; mericarps 2--3 mm. long, the cocci yellowish, subterete or more or less cylindrical, about 0.7 mm. wide, rounded at the apex, truncate at the base, convex and striate dorsally and markedly reticulate-areolate except at the base, smooth and somewhat concave ventrally, the commissural face narrowly acute-angled, sub-bisulcate, and smooth; chromosome number: $2n = 10$.

The type of this common southern South American species is Herb. Willdenow 11139, collected somewhere in Chile by Louis Née [Macbride photograph no. 17460]. The type of V. laciniata Kuntze was collected by Carl Ernst Otto Kuntze in Bolivia [Macbride photograph no. 17424]. V. chamaedryfolia x erinooides is based on Osten 3002 from Costa del Rosario, dept. Colonia, Uruguay, collected on October 24, 1894, growing between "V. erinooides" and "V. chamaedryfolia". I do not believe it to be of hybrid origin; it seems to be typical V. dissecta. The only true hybrid of this species known to me is with V. tenuisecta Briq. and is herein discussed under xV. nequam Moldenke.

It is worth noting here that the V. dissecta of Morong is V.

tenuisecta Briq., that of Schauer is V. berterii (Meisn.) Schau., and that of Poeppig and of Walpers is V. sulphurea D. Don; the V. erinoides of Chodat is V. calliantha Briq. and V. storeoclada Briq., that of Lamarck is V. laciniata (L.) Briq., that of Willdenow is V. ciliata Benth., and that of Hooker, of Hooker & Arnott, of Linnaeus, of Poeppig, and of Sprengel is V. berterii (Meisn.) Schau.; and the V. laciniata of Briquet and of "(Lamarck) Briquet" are V. laciniata (L.) Briq., while that of Sessé & Mocino is Bouchea prismatica var. laciniata Grenz. The V. dissecta f. glandulifera (Sanzin) Moldenke is V. perakii (Covas & Schnack) Moldenke.

Verbena dissecta inhabits dry, dry-arid, cultivated, sunny, and high dry soil, sandy banks, matorales, dry barren scrublands, quebradas, fields, pampas, and dunes. It has been collected along railroad tracks and road embankments, in grassy meadows and grassy fields, campos, parks and waste ground, wet meadows and rocky fields, pastures and barnyards, on stony hills and sandy-rocky hills, in brambly places and sandy places, on salty ground, among grasses, at the edges of small arroyos, in "campo abierto" and Juncus acutus swamps, often forming handsome carpets in waste soil and cultivated fields, at altitudes of 60 to 4000 meters. It has been collected in anthesis and fruit in every month of the year. Cabrera says of it "campestre poco frecuente"; Maldonado reports it as "abundant everywhere" in Santiago del Estero; Schulz says that it is abundant around Río Sali, but the plant is always small, while Jørgensen reports it as abundant at El Saladilla, Tucumán. Rosengurt claims that in Uruguay it is found "en campos bajos y rastrojos".

Common names recorded for this plant are "cutleaf verbena", "margarita morada", and "margarita morado". Vervoorst asserts that the color of the corolla is that of "Maerz a. Paul Pl. 41 H-3", but that when dried the flowers lose their color.

Herbarium material has been misidentified and distributed under the names V. cabreræ Moldenke, V. calliantha Briq., V. crinoides Lam., V. erinoides Lam., V. incisa Hook., V. laciniata (L.) Briq., V. microphylla H.B.K., V. pulchella Sweet, V. radicans Gill. & Hook., V. sulphurea Sweet, V. tenera Spreng., V. tenuisecta Briq., and "V. aff. erinoides Lam." Osten determined some of his specimens as "Verbena Artengruppe erinoides Lam.", "V. erinoides Auth. an Lam.?", and "V. 'erinoides Lam.' nach Briq. = V. tenera Sprengel".

On the other hand, the Claude-Joseph 1248, 3548, 4456, & 5053, distributed as V. dissecta, are actually V. berterii (Meisn.) Schau.; Claude-Joseph 4988 is V. lipozygioides Walp.; Cook & Gilbert 549 is V. microphylla H.B.K.; Sehnen 5052 is V. tenera Spreng.; and W. E. Broadway 4997, Faris 478, Lazar 432, Morong 219, Pedersen 1323 & 3949, Rambo 51652, and F. A. Wetmore 830

are V. tenuisecta Briq.

Barker asserts that V. dissecta is "a verbena commonly cultivated in Puerto Rico gardens. It occurs in two varieties, pink and white." Troncoso says that it is cultivated in Argentina. Apparently it was first introduced into cultivation commercially in 1920. The Baileys (1935) assert that the material in the horticultural trade passing under this name is actually V. pulchella. The four specimens in the Bailey Hortorium herbarium examined by me, however, under this name, are true V. dissecta, so I think that Dr. Bailey was in error in his assertion.

Chicchi 264 is a mixture with V. hookeriana (Covas & Schnack) Moldenke. Troncoso (1939) gives the date of Weddell's reference as "1857", but the part referred to seems definitely to have been published first in 1860.

Schauer (1847) says of V. dissecta: "Habitus fere sequentes [V. erinoides Lam.], a qua vero sicut a praecedente [V. tenera Spreng.] praeter alia jam inflorescentia paniculata spicisque vix elongandis facile discriminatur." In his 1851 publication he amplifies this to "Habitus fere Verbenae erinoidis, a qua vero sicut a V. tenera differt; caule suffruticoso, hirsutie uberiore, spicis brevibus fastigiatis neque elongatis saepe in paniculam cymosam interdum amplam collectis; ab illa insuper recedit calycibus glandulis capitatis in sicco depressis obsitis, appendiculis antherarum majoribus. Variat statura foliisque modo cuneatis late tripartitis partitionibus inciso-dentatis, modo pinnatifido-laciniatis."

Troncoso (1939) says of V. dissecta: "nueva para la flora argentina. — Esta interesante especie conocida de Chile, Peru, Bolivia, Brasil y Uruguay, no habia sido citada hasta ahora para la Argentina. Probablemente, esto tenga por causa su afinidad con V. tenera Spr. y V. laciniata (Lam.) Briq., con las que puede facilmente confundirse. No seria de extranar que figurara en los herbarios bajo alguna de estas denominaciones. La encontré por primera vez en las barrancas de la localidad bonaerense de Campana y Posteriormente, en Julio del año pasado, fue herborizada por el ingeniero Arturo Burkart en las barrancas riberenas de San Fernando, F. C. C. A. Los ejemplares coleccionados coinciden exactamente con la fotografia del tipo (no. 17460, de la serie del Field Museum de Chicago), lo que me permitio identificarla, pese a la brevedad de la diagnosis original..." She cites Burkart 3082, Troncoso 172, and Burkart 10191 from Buenos Aires, and Felippone 6118, 6975, & 2847, Hicken 74, and Rosengurtt 2116 1/2 from Uruguay, all in the herbarium of the Instituto Darwinion at San Isidro. She continues: "Los pocos autores.....que se han ocupado de esta especie, coinciden en considerarla como planta anual, solo Reiche.....duda de esta caracter. Indudablemente es una planta perenne; se halla en cultivo en el Darwinion desde mediados del año pasado.....Es vecina a V. tenera Spr. y V. laciniata (Lam.) Briq., de las que se aparte por la inflorescen-

cia en espigas mas densas y nunca alargadas en la fructificacion, y por sus glandulas anterales de mayor tamaño y netamente visibles en la garganta del tubo corolar.....El ejemplar leg. Burkart, SI. 10191, cultivado en el Darwinion, se ha desarrollado con todo vigor, formando en plena floracion como una gran mancha de color lila de mas de 1 m de extension. Su rapido crecimiento, su facil multiplicacion vegetativo por gajos y sus vistosas y perfumadas flores, hacen a esta planta muy recomendable para el adorno de los jardines."

Rosengurtt (1946) says "Mala hierba perenne, estolonífera achatada contra el suelo, de ciclo indefinido. Abunda en campos vírgenes y de rastrojo. Es constituyente accesorio de las estructuras degeneradas, y disminuye en los campos regenerados." In his 1943 work he says: "Hierba hemicriptófito y estolonífera cundidora; florece en primavera (agosto-enero). Habita laderas de tapiz bajo preferentemente donde sus tallos son acostados y cundidores, pero en los lugares no pastoreados, los tallos son erguidos y radicantes. Es muy común pero inútil, y decorativa cuando floreceEsta planta fué publicada anteriormente por los autores.... con el nombre de V. tenera Spreng." Ragonese (1951) says "Hierba, con tallos decumbentes, que suele observarse en esta región en los terraplenes de las vías férreas y en los bordes de los caminos; de amplia dispersión ed Sudamérica. En Argentina habita desde Salta hasta Buenos Aires y Río Negro."

Walpers (1843 & 1845) cites Poeppig 157 for this species, but Schauer (1847) cites it for V. sulphurea. The latter author also (1847, 1851) cites Sellow s.n. from Uruguay, Née s.n. from Chile, Meyen s.n. from near Tissacoma, alt. 15,000 feet, Peru, and Lund s.n., Raben s.n., Riedel s.n., and Sellow s.n. from São Paulo, Brazil, all deposited in the Berlin, DeCandolle, and Willdenow herbaria. He points out that the Berlin specimens of Walpers' Shuttleworthia dissecta are all V. sulphurea. However, Walpers' binomial is plainly based on the Verbena dissecta of Willdenow and the name therefore belongs in this synonymy -- the specimens seen by Schauer in the Berlin herbarium, since destroyed, were merely misidentifications on Walpers' part. Augusto (1946) cites Augusto & Edésio s.n. from Odório, Rio Grande do Sul, Brazil.

Schnack (1942) refers to a "V. aff. dissecta x V. peruviana", but just what this hybrid actually is has not yet been determined by me. Briquet (1904) suggests that V. selloi Spreng. may be conspecific with V. dissecta, but I am placing it in the synonymy of V. laciniata. Venturi 5264 was erroneously cited as V. calliantha Briq. in my Alph. List Cit. 4: 1090 (1949), while the Jørgensen 1613 cited as V. dissecta in the same work, 2: 599 (1948) is the type collection of V. andalgalensis Moldenke.

For a key to distinguish V. dissecta from related species, see under V. laciniata.

In all, 288 herbarium specimens and 7 mounted photographs, including type or phototype material of all the names involved, have

been examined by me.

Citations: BRAZIL: Rio Grande do Sul: Jürgens 74 (B); Rambo 10103 (N), 48914 (N). São Paulo: Brade 7000 (N, N, Sp--6728); Collector undesignated 217 (Sp--20061); Freire & Azevedo 110 (Ja--24187); Löfgren s.n. [Itapetininga, Sept. 22, 1887; Herb. Comm. Geogr. & Geol. 3685] (N, Sp--15725). State undetermined: Raben 828 (Br); Sellow s.n. [Brasilia] (Br). BOLIVIA: Tarija: Troll 281 (B). Province undetermined: Kuntze s.n. [Macbride photos 17424] (Kr--photo, N--photo). URUGUAY: Collector undesignated s.n. [San Carlos, 8 Dec. 1884] (Ug); Commerson s.n. [Macbride photos 39502, in part] (Kr--photo); Felippone 6118 (W--1858371); Gallinal, Aragon, Bergalli, Campal, & Rosengurt 1433 (N), 1625 (Po--230976), 1821 (N), PE.5262 (Ml, N, N, Si); Herter 50882 (N), s.n. [Herb. Osten 17657] (Ug); Osten 3002 (Ug), 3305 (Ug), 4539 (Ug), 5642 (Ug), 6386 (Ug), 7793 (S, Ug, Ug), 10356 (S, Ug), 14676 (S, Ug), 16039 (Ug), 22096 (Ug); Rosengurt B.2116 (N), B.3756 (Ml, N, N); Seijo 650 (Ug), s.n. [Colon, 30 Nov. de 1884] (Ug). CHILE: Province undetermined: Née s.n. [Herb. Willdenow 11139; Macbride photos 17460] (Kr--photo of type, N--photo of type, Z--photo of type). ARGENTINA: Buenos Aires: Boffa 330 (N); Cabrera 10712 (Mv); Carette s.n. [Monte Hermoso] (N); Collector undesignated s.n. (S); Commerson s.n. [Macbride photos 39502, in part] (Kr--photo, N--photo); Hauman s.n. [Sierra du Tandil, XII/1905] (Br); J. H. Hunziker 384 (S); Lefebre s.n. [Monte de Talas, La Plata, 1891] (Br); T. Meyer 6990 (S); Née 30 (Q), 96 (Q); Ruiz Huidobro 1176 (S). Catamarca: F. A. Barkley 19Ar561 (N); Brizuela 375 (N, Ok), 409 (N), 445 (N), 502 (N), 546 (N), 754 (N), 826 (N), 872 (N, Rf), 883 (N), 993 (N), 1037 (N), 1197 (N); Jørgensen 1613 [Herb. Inst. Miguel Lillo 31745; Herb. Osten 10676] (N, N, Ug); Luna Risso 394 (N), 423 (N); Malvarez 68 (N); B. L. Muller 51 (N), 109 (N); Pierotti 11529 [Herb. Inst. Miguel Lillo 28312] (Bm, Ut--115411b), "h" [La Merced] (Bm), s.n. [18/V/44] (Ca), s.n. [19/V/44] (Ca); Schreiter 1904 [Herb. Inst. Miguel Lillo 32759] (Ug--4912); Sleumer & Verveorst 2369 (W--2173085); Venturi 7163 (Gg--161333). Chaco: Cabrera 3169 (Bt--43535, Ja--30410, N, N, S); A. G. Schulz 1470 (N), 1472 (N); C. L. Schulz 784 (S); Venturi 9780 (Gg--173450). Córdoba: Castellanos s.n. [Herb. Mus. Argent. Cienc. Nat. 31195] (N); Cuezzo 901 (N); T. Meyer 13726 (N, Sm); Ragonese 6256 [Herb. Inst. Bot. Minist. Agr. Nac. 68521] (N); Ragonese & Piccinini 6394 [Herb. Inst. Bot. Minist. Agr. Nac. 68411] (N); Ruiz Leal 12098b (Ss); Varela 404 (Ca--165151); Villafañe 29 (Gg--352669, Gg--353263, N, N), 120 (Gg--353264, N), 334 (N), 524 (N). Formosa: I. Morel 1477 (N). Jujuy: Cabrera 4055 (N, N); Eyerdam & Beetle 22317 (Ca--

652218); Schreiter 5013 [Herb. Osten 20754] (Ug); Venturi 5027 (W--1591454), 5264 [Herb. Osten 20796] (Ca--342620, Ca--376428, Gg--158394, Ug, W--1440785, W--1591466). La Pampa: Chicchi 264, in part (N). La Rioja: Afary 15 (Ut--115413b); Castellanos s.n. [Herb. Mus. Argent. Cienc. Nat. 33882] (N); Cuezzo 973 (N); F. A. Roig s.n. [Ruiz Leal 15453] (Ss). Mendoza: Ruiz Leal 8497 (N), 8825 (N), 8883 (N); Semper s.n. [Ruiz Leal 9833] (N). Río Negro: U. S. Expl. Exped. [Wilkes] s.n. (T). Salta: R. M. Aguilar 286 (Bm, Ca); Barsini 731 (N); Cabrera 3004 (N, S); Dinelli s.n. [1906] (Bm); Lillo 10871 [Herb. Osten 8474] (Ug); Malvarez 175 (N), 206 (N), 245 (N), 609 (N, Rf); T. Meyer 12290 (N); Moldenke & Moldenke 19740 (Es, Lg, N, Ot, Sm); D. Rodriguez 19 [Herb. Inst. Miguel Lillo 31698] (N); F. A. Roig s.n. [Ruiz Leal 17880] (Rl); Ruiz Leal 12632 (Ss); Torrent s.n. [Laguna El Duraznito, 5-IX-1945] (N); Venturi 10301 (N); Zabala 116 [Herb. Inst. Miguel Lillo 38045] (N). San Luis: Ruiz Leal 11667 (Z). Santa Fé: Kuntze s.n. [Ceres, Oct. 1892] (W--701722). Santiago del Estero: H. H. Bartlett 20416 (Mi, W--1907572), 20428 (Mi); Cuezzo 2302 (S), 2325 (Gg--353273, N), 2384 (N), 2404 (N, Ok), 2492 (N, St), 3302 (S); Di Lullo 22 (Ug--6479); Luna Risso 11 (N), 83 (N); Maldonado B.185 (N); Pierotti 53 (Ca), "h" [El Cimbolar] (Bm, N), "n" (Bm), s.n. [31-III-1944] (S), s.n. [1.IV.44] (W--1934031), s.n. [6-4-44] (W--1934029); Ruiz Huidobro 3052 (N, Ok), 3108 (N), 3137 (N); Venturi 5754 (W--1591479); E. Wall s.n. [Inca, 9/11/46] (Ew), s.n. [Escolta, 9/11/46] (Ew); Wall & Sparre s.n. [Guardia, 9/11/46] (Ew). Tucumán: Baer 6 (S); Bailetti 231 [Herb. Inst. Miguel Lillo 31690] (N); Bruch s.n. [Valle de Tafé, 1908] (N); Jørgensen 86 [Herb. Osten 11490] (Ug); Lillo 1873 [Herb. Osten 8476] (Ug), 2022 [Herb. Inst. Miguel Lillo 31712; Herb. Osten 8475] (N, Ug), 15286 [Herb. Osten 8454] (Ug), 16128 [Herb. Osten 8450] (Ug); T. Meyer 3094 (N), 3368 (N, N), 4288 (Ml, N); Moldenke & Moldenke 19717 (N), 19720 (B, Es, F, Fy, Lg, Lm, Mg, Mr, N, No, Ot, Rs, S, Sm, Ss), 19753 (Es, Es, Lg, N); Monetti 1450 [Herb. Inst. Miguel Lillo 31692] (N), 3014 [Herb. Inst. Miguel Lillo 31721] (N), s.n. [Herb. Inst. Miguel Lillo 31696] (Du--317602); Moretti 2113 [Herb. Inst. Miguel Lillo 31694] (Mv); O'Donnell 4600 (N); Olea 4 (Ca--165410), 190 (Ca--164674); Peirano 9181 [Herb. Inst. Miguel Lillo 32894] (N); Schreiter 1904 [Herb. Inst. Miguel Lillo 32759] (N, N), 2358 [Herb. Inst. Miguel Lillo 32760] (N), 6522 [Herb. Osten 22968] (Ug), 8114 [Herb. Inst. Miguel Lillo 32758] (Ug--4938), 8116 [Herb. Inst. Miguel Lillo 32754] (N), s.n. [Tucumán, Aug. 12, 1917; Herb. Osten 12183] (Ug), s.n. [Taff Viejo, July 8, 1923; Herb. Inst. Miguel Lillo 32758] (N), s.n. [Tapia--Cadillal, Herb. Osten 12181] (Ug), s.n. [Cadillal; Herb. Osten 12182] (Ug), s.n.

[Cumbrechica del Chorro; Herb. Osten 12198] (Ug); A. G. Schulz 2885 (N), 2889 (N); Scolnik, Araque Molina, & Barkley 21Tu005 (N); C. Skottsberg s.n. [Est. Agric. Exp. 16/10/1948] (Go); Terribile 162 (N), 289 (N), 325 (N), 338 (N); L. A. Varela s.n. [La Ramada, 8.III.1944] (N); Venturi 4 [Herb. Inst. Miguel Lillo 31729] (Au, N, W--1591207), 4b [Herb. Osten 17255] (Ug), 1042 [Herb. Inst. Miguel Lillo 31730; Herb. Osten 17253] (Du--372487, N, Ug, W--1591236), 1930 [Herb. Inst. Miguel Lillo 31732; Herb. Osten 17254] (N, Ug, W--1591246), 2303 (W--1591251), 2838 (W--1591269), 3180 [Herb. Osten 17252] (Ug, W--1591275), 3579 (Ca--342571, N, W--1343300), 4762 (S, W--1591444); E. Villa 523 (N), 527 (Gg--353262, N), 544 (N); Wall & Sparre s.n. [Taff Vieja, 19/11/46] (Ew). Province undetermined: Friedmann s.n. [1923] (Ba); Hauman s.n. [Serra de Mallorca, Nov. 1922] (Br); Moreno s.n. [Patagon. 50/3°, 1882--4] (N). CULTIVATED: Argentina: Vervoorst 493 (N). Dominican Republic: B. Augusto 290 (N). England: Nelmes 1113 (Ba); Stearn s.n. [Cambridge Botanic Garden, July 1931] (Ba, Ba). Puerto Rico: E. E. Barker s.n. [Rio Piedras, March 15, 1920] (Ba). LOCALITY OF COLLECTION UNDESIGNATED: Herb. A. Jussieu s.n. (N); Tweedie s.n. (N).

VERBENA DISSECTA f. ALBA Moldenke, Phytologia 2: 422. 1948.

Bibliography: Moldenke, Phytologia 2: 422. 1948; Moldenke, Castanea 13: 119. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 106 & 197. 1949; Moldenke, Alph. List Cit. 4: 1091. 1949; Howell, Wasmann Journ. Biol. 10: 377. 1952; Moldenke, Résumé 127, 425, & 471. 1959; Moldenke, Résumé Suppl. 1: 7 (1959), 2: 5 (1960), and 3: 29. 1962.

This form differs from the typical form of the species in having white corollas.

The type of the form was collected by Santiago Venturi (no. 7068) in a prado at Balcozna, dept. Del Alto, Catamarca, Argentina, at an altitude of 1250 meters, on January 18, 1928, and is deposited in the herbarium of the California Academy of Sciences at San Francisco. The form has been collected at altitudes of 2 to 1250 meters, growing in dry soil and on sandy shores, flowering in January and September. It is said by E. E. Barker to be cultivated along with the typical form in Puerto Rico gardens. It has been misidentified and distributed in herbaria under the name V. laciniata var. albida Herter.

In all, 5 herbarium specimens, including the type, and 4 mounted photographs have been examined by me.

Citations: URUGUAY: Herter 1805 [Herb. Herter 96556] (Du--373695, N, Z). ARGENTINA: Catamarca: Venturi 7068 (F--photo of type, Gg--161452--type, N--photo of type, Si--photo of type, Z--photo of type). Tucumán: Venturi 5018 (W--1591453).

xVERBENA DISSOLUTA Moldenke, Phytologia 5: 133. 1955.

Synonymy: Verbena erinoides x phlogiphthora Schnack, Anal. Inst. Fitotéc. Sta. Catalina 4: 20. 1942. Glandularia laciniata x phlogiphthora Schnack & Covas, Darwiniana 7: 73 & 75. 1945. Verbena laciniata x phlogiflora Dermen ex Moldenke, Phytologia 3: 467, nom. nud. 1951.

Bibliography: Schnack, Anal. Inst. Fitotéc. Sta. Catalina 4: 20. 1942; Schnack & Covas, Darwiniana 6: 472 (1944) and 7: 73 & 75. 1945; Moldenke, Phytologia 3: 467 (1951) and 5: 133. 1955; Moldenke, Biol. Abstr. 30: 1093. 1956; Moldenke, Am. Midl. Nat. 59: 346. 1958; Moldenke, Résumé 223, 296, 372, 376, & 471. 1959; Moldenke, Résumé Suppl. 2: 11 & 12. 1960.

This hybrid was originally regarded by Schnack and Covas, who produced it artificially in Argentina in 1945, as being a cross between V. laciniata (L.) Briq. and V. phlogiflora Cham., and was so regarded by me in my discussion of hybridity in the Verbenaceae (1958). However, it now appears that what Schnack & Covas regarded as V. laciniata is actually V. tenuisecta Briq., so the hybrid is actually one between V. tenuisecta and V. phlogiflora. The two parental species occur rather commonly together in Paraguay, Uruguay, three states of Brazil, and at least four provinces of Argentina, so natural examples of this hybrid may be expected there. It should certainly have considerable horticultural merit, and so deserves further study and experimentation.

VERBENA DOMINGENSIS Urb., Symb. Ant. 5: 484. 1908.

Synonymy: Verbena officinalis Auct. ex Alain in León & Alain, Fl. Cuba 4: 281, in syn. 1957 [not V. officinalis Cuevas, 1930, nor L., 1753, nor Lour., 1845, nor Wats., 1942]. Verbena domingense Urb., in herb.

Bibliography: Urb., Symb. Ant. 5: 484. 1908; Prain, Ind. Kew. Suppl. 4: 245. 1913; Perry, Ann. Mo. Bot. Gard. 20: 262, 263, & 355. 1933; Moldenke, Prelim. Alph. List Invalid Names 46. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 25, 26, & 101. 1942; Moldenke, Phytologia 2: 87 & 115. 1945; Moldenke, Alph. List Cit. 1: 24, 64, 99, 138, 189, 216, & 285 (1946) and 2: 525, 554, 570, 645, 646, 649, 651, & 652. 1948; Moldenke, Castanea 13: 114. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 45, 48, & 198. 1949; Moldenke, Alph. List Cit. 3: 880 & 927 (1949) and 4: 1178, 1188, 1256—1259, & 1289. 1949; Alain in León & Alain, Fl. Cuba 4: 281. 1957; Moldenke, Résumé 53, 57, 371, & 471. 1959.

Erect or sprawling perennial shrubby herb, 30--60 cm. tall, growing in fasciculate fashion, or more or less sprawling, arching, scrambling, or even scandent and to 1 m. long; roots branched, producing very many rootlets at the apex; stems numerous from the root, branched, angulate-striate, 1--1.3 mm. in diameter above the base, smooth, glabrous, often becoming pale-purple, with only a few leaves; branches glabrous, mostly producing 3 spikes at their apex; principal internodes many times longer than the

adjacent leaves; petioles 1--2 mm. long; leaf-blades varying from oval-elliptic or elliptic-oblong (lower ones) to lanceolate or linear (upper ones), 0.7--4 cm. long, 3--5 mm. wide, obtuse or acute at the apex, narrowed and decurrent into the petiole at the base, sparsely crenate or incised-crenate along the margins with 2--4 teeth on each margin, sometimes entire, scabrous above with basally inflated hairs, short-pilose beneath especially on the veins, the upper leaves decreasing in size, sparsely crenulate or entire and scale-like; spikes eventually 6--15 cm. long, lax, minutely pilose with erect hairs and a few slender glanduliferous ones; flowers rather lax; calyx about 1.5 mm. long, strigose or very short-strigillose on the outer surface, the sepals connate by a thin membrane, the rim short-dentate, the teeth acute; corolla varying from blue or dark-blue to purple-violet, purple, purple-red, lavender, or pink, scarcely 4 mm. long, the tube cylindrical below, obconic-ampliate above, the limb 5-lobed, 2 of the lobes ovate-elliptic and half as long as the tube, the other 3 lobes somewhat longer-connate between themselves, the middle ones slightly longer and wider; stamens inserted at the middle of the corolla-tube; anthers subquadrate; style 0.8 mm. long, very shortly bilobed at the apex, one lobe convex and stigmatiferous, the other tooth-like and smooth; lower fruiting-calyxes many times shorter, upper ones one-half or one-third as long as the intervals between them; cocci brown, scarcely over 1 mm. long, ribbed on the back, densely white-striolate with raised striae on the inner face.

The species was based on a collection by Baron Henrik Franz Alexander Eggers (no. 1828) from among limestone rocks on the banks of the Río Yaqui, at an altitude of 210 m., near Angostura, Dominican Republic, flowering and fruiting in May, and on one made by Carlo Guiseppe Bertero (no. 735) at an undesignated locality in the Dominican Republic, both deposited in the herbarium of the Botanisches Museum at Berlin. Urban says "Alia species hujus generis in Sto. Domingo sponte crescens, V. officinalis L., caulibus subsimplicibus, foliis pluries majoribus, pinnatifidis v. inferne pinnatipartitis, floribus majoribus: in Valle nuevo ultra sylvam umbrosam in paludosis 1970 m. alt.; Eggers n. 2175".

Holdridge describes the species as an "herb to 1 m. long, scandent", while the Howards say that it is an "arching plant in marsh", a "sprawling plant mainly in grass clumps", a "sprawling plant of grassy savannas", and a "sprawling herb in pine woods." Other collectors have found it in wet places, open grassy slopes, pine forests, waste ground, cultivated fields, sugarcane fields, on Eocene limestone ridges, at the edge of brooks, and in fissures of coral rock, at altitudes of 500 to 2500 meters, flowering and fruiting from March to January.

Ekman describes the species as a "weed in canefields" in Pinar del Río, but says that it is "rather rare" in Oriente, Cuba. Leonard calls it "scarce" in Haiti. A common name recorded for it is "verbena", a name applied to many other species of the genus and of related genera. Herbarium material has been mis-

identified and distributed under the names V. officinalis L., V. scabra Vahl, and as "Labiata sp. subaphylla". Britton, Britton, & Shafer 292 is a mixture with Stachytarpheta jamaicensis (L.) Vahl. Rugel states that his no. 121, cited below, is the same as his no. 856, not as yet seen by me.

It should be noted here that the V. officinalis of Cuevas is Stachytarpheta jamaicensis (L.) Vahl, that of Watson is Verbena menthaefolia Benth., while that of Loureiro is V. officinalis L.

Perry (1933) reduced V. domingensis to synonymy under V. officinalis L., saying: "On the whole, the specimens from Santo Domingo and Cuba differ from the typical V. officinalis in their slender and more elongate habit; the inflorescence is scarcely as glandular, the flowers are smaller, and the nutlets often do not exceed 1.5 mm. in length. Nevertheless, the Cuban specimens vary greatly in size, and Curtiss 677 is hardly separable from typical V. officinalis. Since many of the specimens are rather poor, it appears probable that they may very well represent an impoverished condition. Urban himself was somewhat uncertain of the status of his species as he appended the following note in a later publication: 'An re vera a formis V. officinalis L. separanda?' To me the species looks more like Herter's V. gracilescens from southern South America than it does the big husky European V. officinalis. Nevertheless, in my 1940 publication, cited above, I followed her disposition of it -- a position since abandoned by me. The United States National Herbarium specimen of Curtiss 677, as pointed out by Perry, is not at all typical -- its many stems from a basal rosette of leaves cause it to resemble greatly V. halei Small; but other sheets of this collection have the typical more sprawling stems.

Perry cites the following 5 additional specimens not as yet seen by me: CUBA: Havana: Curtiss 677 (D, E, G). Province undetermined: C. Wright 3658 (G). HISPANIOLA: Haiti: E. C. Leonard 3939 (G).

In all, 77 herbarium specimens, including type material of all the names involved, and 3 mounted photographs have been examined by me.

Citations: CUBA: Havana: Alain A. 785 (N); C. F. Baker 2591 (N, Po--63884); Baker, Tracy, & Hasselbring s.n. (Es--3098); Boldo 94 (Q); Britton & Cowell 10326 (N); Curtiss 677 (Cm, Es, Es, N, Vt, W--522300); Ekman 465 (S), 614 (S); León 131 (Ha), 6862 (Ha, N), s.n. [21-4-1921] (Se--30147, Vi); León & Edmund s.n. [Playa de Marianao, Abril 21, 1921] (N); Shafer 61 (Cm, Es). Las Villas: Fernando 297 (Ha, N). Matanzas: Britton, Britton, & Shafer 292, in part (Cm, Es); Rugel 121 (Bm, C). Oriente: Acuffa, Alonso, & Pina 18801 (Es); Ekman 7960 (N, S). Pinar del Río: Ekman 10381 (S), 11196 (S). Province undetermined: C. Wright 98 [1865; Herb. Sauvalle 1744] (Hv), 3658 (Pa, W--71967). HISPANIOLA: Dominican

Republic: H. A. Allard 12468 (W--1955954), 14838 (N, S, W--1958659); Chardon 34 (Ba, N, N); Eggers 1828 (C--cotype, Le--cotype, N--photo of cotype, S--photo of cotype, W--940047--cotype, W--1672010--cotype, Z--photo of cotype); Ekman H.13581 (N, S, W--1711890); Fuertes 1771 (N), 1856 (N); R. A. Howard 12180 (N, N); Howard & Howard 9056 (N, W--2110920), 9083 (N, S, W--2110930), 9320 (N, W--2110976); J. de J. Jiménez 1067 (W--1882569), 2131 (W--1957796). Haiti: J. T. Curtis Jr. s.n. [July 27, 1944] (W--1881388); Ekman H.1560 (S, W--1411844), H.1569 (S, W--1411850), H.9314 (S); Holdridge 834 (Gg--316098, Mi, N, N, W--1880214); E. C. Leonard 3939 (N, W--1076321). CULTIVATED: Guadeloupe: Questel 1686 (W--1781452).

VERBENA DUSENII Moldenke, *Phytologia* 2: 422. 1948.

Bibliography: Moldenke, *Phytologia* 2: 422. 1948; Moldenke, *Castanea* 13: 117. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 94 & 198. 1949; Moldenke, *Alph. List Cit.* 4: 1249 & 1250. 1949; *Stellfeld, Trib. Farmac.* 19 (10): 166. 1951; *E. J. Salisb., Ind. Kew. Suppl.* 11: 263. 1953; *Angely, Bol. Inpabo. Inst. Paran. Bot.* 14 & 15. 1955; *Angely, Fl. Paran.* 7: 6, 7, & 12 (1957) and 12: 17. 1958; *Moldenke, Résumé* 110 & 471. 1959; *Angely, Fl. Paran.* 16: 78 (1960) and 17: 46. 1961.

Apparently a rather tall erect herb; stems and branches sharply tetragonal, minutely puberulent or eventually glabrescent on the larger parts, the upper portions often decidedly purplish, twiggy; principal internodes 2--9.5 cm. long; nodes annulate; leaves rather abundant, decussate-opposite, often with several smaller ones in their axils; petioles slender, 3--7 mm. long, margined and on the larger leaves often not distinct from the blade, minutely and sparsely puberulent, especially on the margins; leaf-blades ovate in outline, thin-chartaceous, somewhat lighter green beneath, 1.5--3.5 cm. long, 1--3.3 cm. wide, trifid-dissected, the lobes irregularly incised, acute at the apex, the lower ones widely divergent, very sparsely and minutely strigillose-puberulent on both surfaces (mostly on the lamina above and on the venation beneath), the very slender midrib and secondaries plane or subimpressed above, slightly prominulous beneath, a few short tertiaries often also discernible beneath; inflorescence spicate, terminal and in the uppermost axils, subcapitate-flattened during anthesis, the floriferous portion later elongating to 7 cm., dense, showy; peduncles rather stoutish, tetragonal, mostly purplish, 6--10 cm. long, rather sparsely strigillose with reflexed whitish hairs; bractlets conspicuous, green, rather broadly elliptic, 5--8 mm. long, 2--3.2 mm. wide, acuminate at the apex, glabrous except for the long-ciliate margins; calyx tubular, 9--10 mm. long, 1--1.5 mm. wide, 5-costate, purplish (especially on the ribs), densely white-hispidulous on the ribs, less so in age, the 5 teeth caudate-apiculate, 1.5--2 mm. long, purple; corolla showy, red or lilac, its tube about 15 mm. long, puberulent above the calyx, its

limb 10--13 mm. wide, very sparsely puberulent on the outside, the lobes deeply cordate-notched at the apex; anthers glandular-appendaged.

The type of this very showy species was collected by Per Karl Hjalmar Dusén (no. 7108) -- in whose honor it is named -- in rather swampy ground at Pinhaes, Paraná, Brazil, on October 29, 1908, and is deposited in the herbarium of the Naturhistoriska Riksmuseum at Stockholm. The species is known thus far only from Paraná, and has been collected in anthesis only in October. It has been misidentified in herbaria as V. pinnatisecta Schau.

In all, 9 herbarium specimens, including the type, and 4 mounted photographs have been examined by me.

Citations: BRAZIL: Paraná: Dusén 7108 (Ca--501688--isotype, F-photo of type, N--isotype, N--photo of type, S--type, Si--photo of type, W--1481768--isotype, Z--photo of type), 15779 (N, S); Hatschbach 1519 (N), 2836 (N), 3135 (Z).

VERBENA EHRENBERGIANA Schau. in A. DC., Prodr. 11: 548. 1847.

Synonymy: Verbena ehrenbergiana DC. ex Moldenke, Résumé 363, in syn. 1959.

Bibliography: Schau. in A. DC., Prodr. 11: 548 & 555. 1847; Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 148. 1894; Jacks., Ind. Kew. 2: 1178. 1895; Perry, Ann. Mo. Bot. Gard. 20: 246, 247, 259, 267--268, & 355. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 14, 18, & 101. 1942; Moldenke, Bot. Gaz. 106: 161. 1945; Moldenke, Alph. List Cit. 1: 178, 183, 194, & 203 (1946) and 2: 527. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 57. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 26, 32, & 198. 1949; Moldenke, Alph. List Cit. 3: 687, 752, 753, 829, 842, 891, 958, & 963 (1949) and 4: 986 & 1246. 1949; Moldenke, Résumé 31, 39, 363, & 471. 1959; Lewis & Oliver, Am. Journ. Bot. 48: 639. 1961.

Stems erect, tetragonal, hirsute, branched in paniculate fashion; leaves decussate-opposite, somewhat ovate, 4--10 cm. long, somewhat paler and prominently veined beneath, attenuate at the apex, cuneate at the base and narrowed into the margined petiole, trifid, strigillose above, hirtellous (especially on the venation) beneath, the segments or lobes small, lanceolate-oblong, acute at the apex, coarsely incised-serrate or serrate-dentate; spikes terminal, few, paniculately disposed at the ends of the stems and branches, filiform or very slender, remotely flowered, several inches long, strigillose; bractlets ovate, 1/3 or 1/2 as long as the calyx, acuminate or subulate at the apex, ciliate; flowers subopposite, very exiguous; calyx short, about 1.5 mm. long, narrow, obtuse, denticulate; corolla very small, inconspicuous, white, its tube scarcely longer than the calyx, the limb about 1 mm. wide; fruiting-calyx about 1.5 mm. long, strigillose, its lobes very short, obtuse, mucronate; cocci trigonous, about 1 mm. long, convex on the back, the commissural faces meeting sharply at right angles, almost smooth; chromosome number: $n = 14$.

The type of this species was collected by Carl August Ehrenberg

(no. 713) near Los Reyes, in the state of México. Mexico, and was deposited in the herbarium of the Botanisches Museum at Berlin, now destroyed. Schauer (1847) tentatively suggests that V. xutha Lehm. may belong in the synonymy of this species, but actually the two species are very distinct. He says, further: "Species per se quidem satis insignis, sed quoad habitum fere V. Caroliniana hirsutioris formam Schizophyllum exhibens. Spicae in apice caulis et ramorum paniculis pauperes struente, pluripollicares, gracillimae, floribus suboppositis perexiguis. Calyx $3/4$ lin. longus, angustus. Corolla minima, tubo calyce vix longiore."

Perry (1933) says: "In general habit this species somewhat approaches V. carolina. It differs, however, in its tripartite leaves, smaller flowers, and fruits. The collection from Saltillo [Palmer 2037] is much more densely hirsute on all parts, but apparently is conspecific."

Schauer places the species in his Section Verbenaca, Subsection Leptostachyae. It has been found in moist places, damp riverbeds, and densely wooded waterways, from 1600 to 2025 meters altitude, flowering in February, July, and August, and fruiting in July and August. The Muellers report that it is "rather common in dense woods" in Nuevo León. It has been misidentified and distributed in herbaria under the names V. carolina L. and V. polystachya H.B.K.

On the other hand, the Kellerman 5825, Türckheim 8442 & II.651, and L. V. Velasco 8999, distributed as V. ehrenbergiana, are actually V. carolina L.

In regard to the occurrence of V. ehrenbergiana in Arizona, C. T. Mason, Jr., in a letter to me dated January 26, 1955, says: "I have checked our herbarium for Verbena ehrenbergiana, and we do not have any representatives from Arizona. In fact, we have only two specimens, both of them from Mexico."

Miss Perry cites the following 13 specimens and photographs not as yet seen by me: MEXICO: Coahuila: Edw. Palmer 2037 (G). México: C. A. Ehrenberg 713 (E—photo of type). Nuevo León: Pringle 1948 (D, E, F, G). San Luis Potosí: Orcutt 5423 (E); C. A. Purpus 5451 (E, F, G); Seler 722 (G). Vera Cruz: Ervendberg 153 (D, G). What she cites as "Seler 722" is unquestionably Seler & Seler 722.

In all, 37 herbarium specimens and 2 mounted photographs, including type or phototype material of all the names involved, have been examined by me.

Citations: ARIZONA: County undetermined: Stalmach 198 (Au). MEXICO: Federal District: Arsène 8829, in part (B). Hidalgo: M. T. Edwards 757 (Au); G. L. Fisher 3762 (W—1725465), 46169 (W—1889829), s.n. [Jacala, Aug. 12, 1937] (N); Liebmann 11335 (W—1315096). México: C. A. Ehrenberg 713 [Macbride photos 17414] (Kr—photo of type, N—photo of type). Michoacán: Arsène 8829, in part (N). Nuevo León: Mueller & Mueller 156 (Au, Me, Me),

1132 (Au, Me, Me, Mi); Pringle 1948 (Br, C, Ca--104822, Me, Mi, Pa, S, Vt, W--56190); M. Taylor 238 (Au). Puebla: F. Salazar s.n. [Pahuatlan, 12 July 1913] (Me, W--1169860). San Luis Potosí: C. A. Purpus 5451 (Ca--156750, N, W--463961); Seler & Seler 722 (W--1323087). Tamaulipas: Stanford, Retherford, & Northcraft 891 (Du-288695, N, Se--69700). Vera Cruz: Ervendberg 153 (Cb). LOCALITY OF COLLECTION UNDETERMINED: Ravn s.n. [N. Amer.] (Cp); Herb. Hornemann s.n. [N. Amer.] (Cp).

VERBENA ELEGANS H.B.K., Nov. Gen. & Sp. Pl. 2: 273. 1818.

Synonymy: Verbena moranensis Willd. ex Spreng. in L., Syst. Veg., ed. 16, 2: 750. 1825. Verbena elegans Humb. ex Spreng. in L., Syst. Veg., ed. 16, 2: 750. 1825. Verbena elegans Hort. ex Walp., Repert. Syst. Bot. 4: 33, nom. nud. 1845. Verbena elegans Kunth ex Schau. in A. DC., Prodr. 11: 554. 1847. Verbena lambertii Ker ex Schau. in A. DC., Prodr. 11: 554. 1847. Verbena moranensis H. & B. ex Schau. in A. DC., Prodr. 11: 554, in syn. 1847. Verbena canadensis subsp. elegans Thell., Fl. Advent. Montpel. 428. 1912. Verbena canadensis var. ehrenbergii Thell., Fl. Advent. Montpel. 428. 1912. Verbena elegans Schau. ex Thell., Fl. Advent. Montpel. 428, in syn. 1912. Verbena lambertii Ker ex Moldenke, Résumé 368, in syn. 1959 [not V. lambertii Sims, 1903].

Bibliography: H.B.K., Nov. Gen. & Sp. Pl. 2: 273. 1818; Spreng. in L., Syst. Veg., ed. 16, 2: 750. 1825; Ker in Lindl., Bot. Reg. 13: pl. 1102. 1827; Hook. & Arn., Bot. Beech. Voy. 305 (1838) and 484. 1841; Walp., Repert. Syst. Bot. 4: 30 & 33. 1845; Schau. in A. DC., Prodr. 11: 554. 1847; Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 148. 1894; Jacks., Ind. Kew. 2: 1178 & 1179. 1895; Perry, Ann. Mo. Bot. Gard. 20: 248, 311, 319--320, & 355. 1933; Moldenke, Prelim. Alph. List Invalid Names 45 & 47. 1940; Moldenke, Alph. List Invalid Names 46 & 48. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 18, 74, & 101. 1942; Moldenke, Alph. List Cit. 1: 53 & 178. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 23 & 25. 1947; Moldenke, Phytologia 2: 331 & 347. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 44. 1948; Moldenke, Alph. List Cit. 2: 393, 467, 573, 604, 617, & 639 (1948), 3: 679, 685, 696, 709, 717, 744, 752, 767, 830, & 833 (1949), and 4: 1074, 1076, 1119, 1255, 1295, & 1303. 1949; Moldenke, Phytologia 3: 132 & 141. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 33, 164, & 198. 1949; Moldenke, Sp. Subsp. Cont. Mold. Set 45 [3]. 1951; Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 4: 2209--2211. 1951; Moldenke, Inform. Mold. Set 46 Spec. 4 (1951) and 49 Spec. 3. 1954; Moldenke, Phytologia 5: 22. 1954; Moldenke, Résumé 39, 223, 360, 363, 368, 370, & 471. 1959; Moldenke, Résumé Suppl. 2: 11 (1960), 3: 8, 10, 15, 37, 39, & 40 (1962), 4: 4 (1962), and 5: 4. 1962.

Spreading or prostrate annual herb; stems prostrate-decumbent, procumbent, or creeping, tending to root at the older nodes, more

or less diffusely branched, sparsely hispidulous-hirsute; branches ascending, often purplish, the older ones hirsute or hirsutulous, the younger ones hispid or hispidulous; petioles short; leaf-blades ovate or lanceolate-ovate, 2--5.7 cm. long, 2--3.5 cm. wide, incised-pinnatifid or trifid with the divisions less deeply cleft, cuneate or long-cuneate at the base and narrowed into the margined petiole, dark-green above, lighter beneath, often with branches or fascicles of smaller leaves in their axils, somewhat appressed-hirsute to strigose-hirtellous or -hispidulous on both surfaces, the divisions lanceolate to broadly oblong or linear-oblong, rather obtuse at the apex, entire to sparsely toothed or unequally incised-pinnatifid, subrevolute-margined, the ultimate lobes lanceolate, entire, acute; venation prominulous beneath; spikes terminal and axillary, solitary, pedunculate, about 2.5 cm. long during anthesis, fastigiate, capitate or fascicle-like, rather few-flowered but dense and compact, usually not much elongating after anthesis, hirsutulous and with a few glandular hairs intermixed, the peduncles about 2.5 cm. long; bractlets lanceolate or subulate-lanceolate, varying from half as long as to two-thirds as long as or about equaling the calyx, attenuate at the apex, glandular-hirsute or -hispidulous, ciliate; calyx 6--10 mm. long, more or less densely glandular-hispidulous or -hirsute, the rim very unequally 5-fid, the teeth short, unequal, subulate, the posterior ones shorter, the mouth therefore oblique; corolla hypocrateriform, showy, varying from red, violet, violet-rose, deep-pink, or vivid-pink to magenta-purple, lavender, dark-lavender, or blue, its tube about twice as long as the calyx, puberulent on the outside, barbate in the throat, the limb large, 10--12 mm. wide, the lobes emarginate; anther-appendages short; fruit about half as long as the fruiting-calyx; cocci subcylindric, 3.5--4 mm. long, rugose-reticulate or reticulate-scribulate chiefly on the upper half, the lower part striate; commissural face muriculate.

The type of this very handsome species was collected by Friedrich Heinrich Alexander von Humboldt and Aimé Jacques Alexandre Bonpland between Moran and Regla, Hidalgo, Mexico, at an altitude of about 2600 meters. The type of V. moranensis is their no. 4063, from Moran, deposited in the Willdenow Herbarium at Berlin.

Verbena canadensis var. ehrenbergii Thell. was probably based on C. Ehrenberg 130, from Mexico, which is cited by Schauer in A. DC., Prodr. 11: 554 (1847) as V. lamberti Ker, a binomial which he credits erroneously to Ker, Bot. Reg. pl. 1102 and of which he says "Flores et fructus omnino V. Aubletiae, sed paulo majores" -- but the Lindl., Bot. Reg. 13: pl. 1102 illustration is of "V. paniculata" [= V. hastata L.].

Verbena canadensis subsp. elegans Thell. is based on V. elegans H.B.K. It is worthy of note here that the V. lamberti of Penny and of Sims are V. canadensis (L.) Britton, while that of Sprengel is V. lasiostachys Link, and V. lamberti Sims is also

V. canadensis. Verbena lambertii Ker was erroneously reduced to V. canadensis by me in my Résumé 368 (1959), but actually belongs in the synonymy of V. elegans.

Verbena elegans inhabits rocky fields and mountains, gravelly soil, dry slopes, cliffs, steep mountainsides with oaks and pines, and open forested slopes with pine-oak-madrone associations, from 1000 to 3165 meters altitude. It has been collected in anthesis from February to April, July to September, and November, and in fruit in February, April, July, and September. King describes it as "abundant in open sun" in Tamaulipas, while Feddema reports it as "uncommon in sandy loam in open sun on wooded slopes and barrancas" in Nayarit. It is called "showy verbena", and was introduced into cultivation in 1827. The L. P. McCann specimens cited below were grown from seeds secured from Copenhagen as V. canadensis. Bouchon 4782 is said to have originated in the southern United States and to be subspontaneous in the Botanical Garden at Bordeaux, France.

The Pringle 6908 cited below has its pubescence very short. Née 105 is a mixture with V. teucrifolia Mart. & Gal.

Herbarium material of V. elegans has been misidentified and distributed in herbarium under the names V. aubletia L., "V. aubletia forma", V. bipinnatifida Nutt., V. canadensis (L.) Britton, V. ciliata Benth, V. delticola Small, V. elegans var. asperata Perry, V. tenera Spreng., and V. wrightii A. Gray.

On the other hand, the Chute M.31, G. L. Fisher 3759, H. S. Gentry 2730, Edw. Palmer 191, and Stanford, Retherford, & Northcraft 566, distributed as V. elegans, are all actually var. asperata Perry; R. M. King 4249 is V. cameronensis L. I. Davis; Arsène 1671 is V. ciliata Benth.; and C. R. Orcutt 3551 is V. teucrifolia Mart. & Gal.

Walpers (1845) places V. elegans in his Section Verbenaca, Subsection Inermes, Group Foliosae, Subgroup Macranthae, and Secondary Subgroup Aubletia with ten other species. Schauer (1847) cites Sweet, Brit. Flow. Gard., ser. 2, 4: pl. 353 as V. lambertii Ker, but this plate is cited by me as V. canadensis (L.) Britton. He also cites Mendez s.n. from Vallalpando, but comments that "fol. figura aliena, cor. majore tubo conspicue exserto". For his V. lambertii Ker he says "Intermedia quasi inter praecedentem [V. elegans] et sequentem [V. canadensis], ab illâ foliis minus divisis, floribus majoribus, ab hac vero foliis profundius incisuris integris patentibus distincta. Flores et fructus omnino V. Aubletiae, sed paulo majores." For V. elegans he says "Habitu, formis majoribus, V. erinoidis quodammodo accedens, sed corollâ magnâ jam satis distincta. Walpers says "Proxima V. erinoidis et V. Aubletiae, prioris varietatibus hanc adnumerarem si vidissem specimen siccum."

The colored illustration by Lindley in Bot. Reg. 13: pl. 1102 (1827) often cited as V. elegans is actually V. hastata L. Schauer (1847) mentions a "V. lamberti Ker" on the basis of an Ehrenberg specimen from Mexico.

Perry (1933) comments that V. elegans is "related to V. canadensis but is easily separable by its slender more or less prostrate habit, few-flowered compact spikes, and shorter calyx-teeth. The nutlets of the two are about the same size, but the reticulations in V. elegans are a little coarser than those in the more northern species." She cites the following 12 additional specimens not as yet seen by me: MEXICO: Hidalgo: Clokey s.n. [Real del Monte, 9 May 1910] (E); Humboldt & Bonpland 4063 (E—photo); Pringle 6908 (D, E, F, G), 11092 (E, F, G); C. A. Purpus 1433 (E). Oaxaca: Gandoger s.n. [Tehuantepec, 1906] (E). Vera Cruz: Seler 723 (G). Of Eggleston 10813 she says on the United States National Herbarium sheet "aff. V. Gooddingii Briq."

In all, 96 herbarium specimens and 2 mounted photographs, including type material of most of the names involved, have been examined by me.

Citations: ARIZONA: Cochise Co.: Eggleston 10813 (W--664875); A. R. Moldenke 146 (Am, Fg). Pima Co.: Barneby 2806 (N). MEXICO: Chihuahua: Knobloch 950 (Sm), 5904 (W--1791047). Coahuila: Purpus 4598 (Ca--144758). Federal District: E. Lyonnet 173 (N, W--1406392). Hidalgo: Clokey 1857 (Ca--882859); M. T. Edwards 862 (Au); Humboldt & Bonpland s.n. [inter Moran et Regla; Macbride photos 39479a] (Kr--photo of type, N--photo of type); E. Lyonnet 2231 (W--1748265); Martinez 11 (W--1791051); Matuda 21650 (N), 29558 (Z); H. N. Moldenke 19842 (Mg, No); Moldenke & Moldenke 19842 (B, Es, F, Fy, Lg, Lm, Mr, N, Ot, Rs, S, Sm, Ss), 19843 (Es, Lg, N, Sm); Pringle 6908 (Br, Ca--104710, Cm, Io--38754, Me, Me, Mi, N, Po--63864, S, Vt, W--334766), 11092 (Cm, N, W--460474); Purpus 1433 (Ca--138829, Po--63880), s.n. [Pachuca, May 1905] (Ca--139757); Rose & Hay 5556 (W--395320); Rose, Painter, & Rose 8668 (N, W--452162); Sharp, Hernandez, & Goodman 44594 (N); Yates & Wilcox 155 (Ak--31225). México: C. L. Lundell 12210 (Ld). Michoacán: W. C. Leavenworth 292 (Ld). Nayarit: Feddema 653 (Mi). Nuevo León: Mueller & Mueller 158 (Au, Me); Tharp 1826 (Au, Au, Au). Oaxaca: Galeotti 779 (Br). Puebla: Bruff 1527 (Cb); Purpus s.n. [1907] (Ca--138832). Querétaro: Waterfall & Wallis 14159 (St), 14172 (St). San Luis Potosí: Mickel 517 (Mi). Sinaloa: H. S. Gentry 7181 (Ca--946136, Mi, N). Tamaulipas: R. M. King 4513 (N); H. W. Viereck 1047 (W--1687519). Vera Cruz: A. J. Sharp 44723 (O). State undetermined: C. A. Ehrenberg 130 (Vt); Keerl s.n. [Tlapujahua, 1829] (Br); Née 105, in part (Q); H. W. Viereck 253 [C. Victoria] (W--1687128). CULTIVATED: France: Bouchon 4782, in part (La). Germany: Golenz s.n. [Schwiebus, 1872]

(B). Maryland: L. P. McCann s.n. [9-15-36] (Md, Md). Massachusetts: Leavitt s.n. [Cambridge, 13 Oct. 1898] (Rf). Michigan: C. F. Wheeler s.n. [1891] (Po--63888). New York: H. N. Moldenke 18462 (Ec, Jr, N, N, Si). Sweden: A. Andersson 5 (Ew); E. Wall 5 [1902] (Ew). Switzerland: Bernet s.n. (S).

VERBENA ELEGANS var. ASPERATA Perry, Ann. Mo. Bot. Gard. 20: 319-320. 1933.

Synonymy: Verbena elegans asperata Perry ex Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 6: 2209. 1951.

Bibliography: Perry, Ann. Mo. Bot. Gard. 20: 311, 319--320, & 355. 1933; H. S. Gentry, Rio Mayo Pl. [Carnegie Inst. Wash. Publ. 527:] 43, 222, & 306. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 18, 74, 80, & 101. 1942; Moldenke, Known Geogr. Distrib. Verbenac. Suppl. 1: 2. 1943; Moldenke, Bot. Gaz. 106: 161. 1945; Moldenke, Phytologia 2: 79 & 115 (1945) and 2: 162. 1946; Moldenke, Alph. List Cit. 1: 19, 20, 40, 79, 100, 143, 203, 232, & 233 (1946) and 2: 481, 497, 527, 579, & 631. 1948; Moldenke, Wrightia 1: 230. 1948; Moldenke, Castanea 13: 119 & 121. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 23, 33, 107, 164, & 198. 1949; Moldenke, Phytologia 3: 141. 1949; Moldenke, Alph. List Cit. 3: 683, 753, 768, 784, 799, 807, 847, 879, 933, & 963 (1949) and 4: 989, 1071, 1099, 1111, 1164, 1170, 1175, 1233, 1245, 1246, 1255, & 1291. 1949; Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 4: 2209 & 2211. 1951; Moldenke, Résumé 29, 39, 129, 223, & 471. 1959; Moldenke, Résumé Suppl. 2: 3 & 6. 1960; Lewis & Oliver, Am. Journ. Bot. 48: 639--641. 1961; Moldenke, Résumé Suppl. 3: 10, 29, & 37. 1962.

Illustrations: Lewis & Oliver, Am. Journ. Bot. 48: 640. 1961.

This variety differs from the typical form of the species in being stouter, more erect, in having its spikes densely many-flowered, elongating after anthesis, and the pubescence usually coarser and hardly or not at all glandular. It is described by collectors, however, as a prostrate, sprawling, or decumbent perennial or biennial herb, the flowers produced in large bunches, and the corolla varying from pink, bright-pink, vivid-pink, rose, deep-rose, or light-red to purple-red, reddish-purple, purple, bright-purple, rhodamine-purple, or magenta-pink.

The type of the variety was collected by Josiah Gregg (no. 355) at San Antonio, Coahuila, Mexico, on August 31, 1848, and is deposited in the herbarium of the Missouri Botanical Garden at St. Louis. Collectors have found the variety on limestone in oak woods, in sandy soil near rivers, in oak forests, mesquite grasslands, on mountains and mountainsides, in mountain meadows and humid mountain valleys, on rocky mountain slopes, dry mountain slopes with cut-over oak woods, rocky slopes, deserts, and pine-oak-madrofia openly forested slopes, at altitudes of 330 to 3930 meters, flowering from February to October and fruiting from April to October.

Common names reported for this plant are "alfombrillo",

"moradilla", and "verbena". Gentry states that it is a characteristic plant of arroyo margins, including meadows in pine forests, and that it is found on rocky meadow slopes in the Pine Forest belt and Transition Pine zone, at altitudes of 5000 to 7000 feet, blooming in summer. The Muellers found it "scattered in open woods" in Nuevo León. Stanford, Retherford, & Northcraft found it on mountains and in canyons with luxuriant vegetation, and on mountains with many bare sandstone outcroppings covered with low brush and herbs. Barkley encountered it "in red clay on limestone mountainside" and "in clay and limestone of mountainside". Martin says that it is a "very common flowering herb above 1400 m. in montane mesic forest, humid oak-pine woods, especially common along trails" in Tamaulipas; McVaugh found it to be "abundant in limestone mountains, oak forests" in San Luis Potosí; and Schneider found it "abundant on open rocky slopes" in Nuevo León.

Gentry reports that a decoction is made from its herbage and used for stomach afflictions in Chihuahua, but he says that it is "uncommon" on the Sonora-Chihuahua boundary. Pennington affirms that "a tea is prepared from this plant for stomach disorders and for catarrh".

For the probable exact location of collection of Stanford, Retherford, & Northcraft 566, which came from 18 km. west of Concepcion del Oro on the Coahuila-Zacatecas border, see my note under V. canescens H.B.K. The specimens of Weaver 585, cited below, bear a notation "same as 562", but I have not as yet seen the latter collection.

Material of this variety has been much confused, misidentified and distributed in herbaria under the names V. ambrosifolia Rydb., V. ambrosiifolia Rydb., V. aubletia L., V. bipinnatifida Nutt., V. canadensis Britton, V. ciliata Benth., V. delticola Small, V. elegans H.B.K., V. erinoides Lam., V. erinoides Willd., V. hybrida Voss, V. multifida Ruiz & Pav., V. pulchella Hort., V. pulchella Sweet, V. remota Benth., V. tenera Spreng., V. venosa Gill. & Hook., V. wrightii A. Gray, Shuttelworthia pulchella Meissn., and Shuttleworthia pulchella Meisn.

On the other hand, the H. S. Gentry 7181, distributed as V. elegans var. asperata, is typical V. elegans H.B.K.; Maysilles 7039 is V. ciliata Benth.; and Graber 183 is V. delticola Small.

The variety was apparently introduced into cultivation in 1883. The Bouchon 4782 cited below is said to represent plants that were both cultivated and subsponaneous in the Botanical Garden at Bordeaux, France. Dr. Bailey reports that seed which he planted at Ithaca, New York, on April 6 produced plants that flowered on August 10. His August 28, 1925, specimen bears a notation: "gland on back of anther -- LHB." The Herb. Prager 18632 does not have any notation on its label indicating that it came from cultivated material, but I am assuming that it did. Burdick 23 was grown from seeds obtained from Amsterdam, while no. 24 was grown from seeds obtained from Cluj, Romania. The seeds for Bas-

tedo s.n. came from Kew, England, those for G. V. Nash s.n. [7 S. 1898] from Geneva, Switzerland, and those for N. Y. Bot. Gard. Cult. Pl. 628 from Berlin, 1145 from Cambridge, 23187 from Hamburg, 23352 from Madrid, and 33298 from St. Louis. The seeds are handled by Haage & Schmidt in Erfurt. The Hort. Huber 753 specimen cited below bears a notation "Verbena pulchella Hort. est V. erinoides Lam. DC. p. 552, no. 64 (!)."

Perry (1933) cites the following 18 additional specimens not as yet seen by me: MEXICO: Chihuahua: Edw. Palmer 295 (G). Coahuila: J. Gregg 355 (E--type); Edw. Palmer 1052 (G); Purpus 4974 (E, F, G). Durango: Edw. Palmer 191 (E, G). San Luis Potosí: Edw. Palmer 51 (E, F, G); Parry & Palmer 720 (D, E, F); Schaffner 716 (G). Sonora: M. A. Crawford s.n. [Hermosillo, 1888] (G); Lumholtz 445 (G), 446 (G). She says "This variety, as compared with the species, is stouter and more erect with coarser pubescence and larger spikes. Palmer 191 differs from the other collections in having very shallowly lobed ovate leaves. Parry & Palmer 720 shows much variation in pubescence, some plants being scabrous, others scarcely so at all. Purpus 4974 is lacking the coarse pubescence but appears more closely allied here than elsewhere."

In all, 153 herbarium specimens and 2 mounted photographs have been examined by me.

Citations: TEXAS: Duval Co.: Lewis & Oliver 5410 (Nb). Hidalgo Co.: Mrs. E. J. Walker 32 (N), s.n. [Feb. 9, 1942] (Au). MEXICO: Chihuahua: H. S. Gentry 2730 (Ca--582067, Fs, Ge, Me, Me, S, W--1686762); Knobloch 496 (Z), 1174 (Mi), 1288 (Mi), 1305 (Mi); Edw. Palmer 295 (W--56166); Pennington 68 (Bm), 369 (Bm). Coahuila: Kenoyer & Crum 2692 (Mi); E. W. Nelson 3896 (W--266885); Edw. Palmer 1052 (Pa, W--56158); Purpus 4974 (Ca--153292, W--842191). Durango: Edw. Palmer 191 (Ca--139760, N, W--571212). Hidalgo: F. A. Barkley 17M009 (Au--123219, Au--123229, N), 17M146 (Au--170048, N); V. H. Chase 7116 (Fs, Ld, N, N, Ur, Ur, Ur); Chute M.31 (Mi); L. I. Davis 205 (N), s.n. [Jacala, June 1941] (Au--172667); G. L. Fisher 3759 (W--1725462), 45198 (Ew, W--1894774), 46151 (Ew, Gg--353139), 46171 (W--1889831), s.n. [Jacala, Aug. 10, 1937] (Fs, N); Lundell & Lundell 12392 (N, Rf, Rf, Rf, W--1926600); Moore & Wood 3922 (Ba); Rowell 2020 (N). Nayarit: W. H. Lewis 5378 (Nb). Nuevo León: M. T. Edwards 129 (Du--278381); Meyer & Rogers 2579 (N), 3022 (N); Mueller & Mueller 328 (Mi); R. A. Schneider 927 (Mi); M. Taylor 129 (Ca--665000); J. N. Weaver 585 (N). Oaxaca: M. C. Johnston 53-691 (Au--122102, St). San Luis Potosí: McVaugh 12274 (Mi); Edw. Palmer 51 (Bm, Me, N, W--397598); Parry & Palmer 720 (Io, Pa, W--56186); F. W. Pennell 17879 (Mi, N, N, W--1640823); F. Rodriguez 17 (W--1490140, W--1490866); Rutten & Rutten-Pekelharing 464 (Ut--79606). Sinaloa: H. S. Gentry

6169 (Ge, N), 7181 (W--1945195). Sonora: Branson s.n. [August 15, 1959] (St); H. S. Gentry 670m (Fs, Mi); Shreve 5946 (Fs); S. S. White 3085 (Mi), 3964 (Mi), 4178 (W--2132338); Wiggins 11673 (Du-346240). Tamaulipas: L. I. Davis s.n. [Feb. 16, 1960] (Au-181592); P. S. Martin 551 (Mi); Rozynski 276 (Fs, Mi), 353 (Mi), 691 (Mi, N); Stanford, Lauber, & Taylor 2486 (Ca--987776, Gg--381242, N, N, W--2216750); Stanford, Retherford, & Northcraft 678 (Du--286303, N, Se--70560, Tu--10659), 1023 (Du--287085, N, Se--70645, Tu--16242); H. W. Viereck 194 (W--1687114). Zacatecas: Stanford, Retherford, & Northcraft 566 (Ca--713837, Du--288651, N, Se--69687, Tu--10912). State undetermined: Berlandier 1703 (Du--166490); Herb. Prager 18632, in part (Gg--31447). SWEDEN: A. Andersson s.n. [Sept. 1931] (Gg--222542). FRANCE: Bouchon 4782, in part (Mg--125). CULTIVATED: Connecticut: Bevoise s.n. [Aug. 1934] (Ba). Cuba: J. G. Jack 8617 (Gg--237848, N). Denmark: Lange s.n. [Sept. 15, 1919] (Ba). England: L. H. Bailey s.n. [Aug. 8, 1919] (Ba); Herb. Mus. Nac. Hist. Nat. Santiago 68314 (Sg); Nelmes 1151 (Ba). France: Hort. Huber 753 (Bm). Germany: Heiland s.n. [Lychen, Rutenberg, 10.VII.83] (Gg--31278); Herb. Prager 18632, in part (Gg--31448); Rehder s.n. [Hort. Bot. Berol., Aug. 30, 1885] (Ba). Massachusetts: L. H. Bailey s.n. [August 6--12, 1929] (Ba). New York: L. H. Bailey s.n. [Aug. 10, 1925; Haage & Schmidt seed 5201] (Ba, N--photo, Z--photo), s.n. [Aug. 28, 1925; Haage & Schmidt seed 5201] (Ba), s.n. [Aug. 28, 1925] (Ba); Bastedo s.n. [21 S. 1897] (N); Burdick 23 (Ba), 24 (Ba); Hartling s.n. [N. Y. Bot. Gard. Cult. Pl. 32403] (N), s.n. [N. Y. Bot. Gard. Cult. Pl. 33298] (N); G. V. Nash s.n. [N. Y. Bot. Gard. Cult. Pl. 628] (N, Qu), s.n. [N. Y. Bot. Gard. Cult. Pl. 1144] (N), s.n. [N. Y. Bot. Gard. Cult. Pl. 1145] (N), s.n. [N. Y. Bot. Gard. Cult. Pl. 1146] (N), s.n. [7 S. 1898] (N); R. C. Schneider s.n. [N. Y. Bot. Gard. Cult. Pl. 23187] (N), s.n. [N. Y. Bot. Gard. Cult. Pl. 23352] (N). Sweden: Blom s.n. (Go); E. Wall 5 [26/841] (S).

xVERBENA ENGELMANNII Moldenke, Revist. Sudam. Bot. 4: 18. 1937.

Synonymy: Verbena alta foliis urticae, floribus dilute coeruleis spicatum in summis caulibus congestis Gronov., Fl. Virg., ed. 2, 4. 1762. Verbena urticaefolio-paniculata Engelm., Am. Journ. Sci. 46: 101. 1844. Verbena paniculato-urticaefolia Engelm., Am. Journ. Sci. 46: 101. 1844. Verbena hastata x urticaefolia Brainerd, Bull. Vt. Agr. Sta. 187: 238. 1915. Verbena hastata x urticifolia Dermen, Cytologia 7: 170. 1936 [not V. hastata x urticifolia Gates, 1959]. Verbena hastata x urticifolia Blanchard ex Moldenke, Revist. Sudam. Bot. 4: 18, in syn. 1937. Verbena hastata x urticifolia Eggert ex Moldenke, Revist. Sudam. Bot. 4: 18, in syn. 1937. Verbena hastata x urticaefolia Norton ex Moldenke,

Revist. Sudam. Bot. 4: 18, in syn. 1937. Verbena urticaefolia x hastata Farwell ex Moldenke, Revist. Sudam. Bot. 4: 18, in syn. 1937. Verbena hastata x urticifolia Perry ex Moldenke, Suppl. List Invalid Names 8, in syn. 1941. Verbena hybrida Bicknell ex Moldenke, Suppl. List Invalid Names 8, in syn. 1941 [not xV. hybrida Voss, 1879]. Verbena urticifolia x hastata Schneck ex Moldenke, Suppl. List Invalid Names 10, in syn. 1941. Verbena hastata x urticaefolia Blanchard ex Moldenke, Alph. List Invalid Names Suppl. 1: 24, in syn. 1947. Verbena hastata x urticaefolia Chase ex Moldenke, Alph. List Invalid Names Suppl. 1: 24, in syn. 1947. Verbena hastata x urticaefolia Dutton ex Moldenke, Alph. List Invalid Names Suppl. 1: 24, in syn. 1947. Verbena hastata x urticaefolia Peck ex Moldenke, Alph. List Invalid Names Suppl. 1: 24, in syn. 1947. Verbena hastata x urticifolia Farwell ex Moldenke, Alph. List Invalid Names Suppl. 1: 24, in syn. 1947. Verbena hastata x urticifolia Pringle ex Moldenke, Alph. List Invalid Names Suppl. 1: 24, in syn. 1947. Verbena urticifolia x hastata Gates ex Moldenke, Alph. List Invalid Names Suppl. 1: 27, in syn. 1947. Verbena hastata x urticaefolia McCoy ex Moldenke, Am. Midl. Nat. 59: 346, in syn. 1958. Verbena hastata x urticaefolia Pammel ex Moldenke, Am. Midl. Nat. 59: 346, in syn. 1958. Verbena engelmanni Moldenke, Résumé Suppl. 2: 11, in syn. 1960. Verbena urticifolia var. paniculata Engelm. ex Moldenke, Résumé Suppl. 3: 41, in syn. 1962. Verbena urticifolia paniculata Engelm. ex Moldenke, Résumé Suppl. 3: 41, in syn. 1962.

Bibliography: Gronov., Fl. Virg., ed. 2, 4. 1762; Engelm., Am. Journ. Sci. 46: 101. 1844; E. Brainerd, Bull. Vt. Agr. Exp. Sta. 187: 238. 1915; Dermen, Cytologia 7: 170. 1936; Moldenke, Revist. Sudam. Bot. 4: 18. 1937; Moldenke, Prelim. Alph. List Invalid Names 46, 47, & 49. 1940; C. C. Deam, Fl. Indiana 797 & 1232. 1940; Moldenke, Suppl. List Invalid Names 8 & 10. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 2, 3, 6, 7, 9, 11, & 101. 1942; Moldenke, Alph. List Invalid Names 47, 49, & 51. 1942; Deam, Kriebel, Yuncker, & Friesner, Proc. Ind. Acad. Sci. 51: 127 (1942) and 52: 104. 1943; Moldenke, Known Geogr. Distrib. Verbenac. Suppl. 1: 1. 1943; Deam, Kriebel, Yuncker, & Friesner, Proc. Ind. Acad. Sci. 54: 95. 1945; Moldenke, Bot. Gaz. 106: 159. 1945; Moldenke, Castanea 10: 38. 1945; Moldenke, Am. Journ. Bot. 32: 609. 1945; Moldenke, Phytologia 2: 68, 80, & 115. 1945; Moldenke, Alph. List Cit. 1: 33, 41, 43, 89, 93, 110, 149, 150, 181, 184, 193, 195, 197, 213, 214, 224, 234, 236, 244, 248, 279, 282, 283, & 287. 1946; Moldenke, Phytologia 2: 327 & 347. 1947; Hill & Salisb., Ind. Kew. Suppl. 10: 242. 1947; Moldenke, Alph. List Invalid Names Suppl. 1: 24 & 27. 1947; Moldenke, Alph. List Cit. 2: 360, 395, 396, 398, 405, 438, 472, 477, 495, 513, 517, 520, 521, 547, 596, & 612 (1948), 3: 699, 719, 740, 744, 773, 790, 792, 793, 803, 807, 808, 831, 884, 904, 916, 930, & 946 (1949), and 4: 1119, 1138, 1162, 1173, 1175, 1176, 1189, 1201, 1238, 1251, 1255,

1260, & 1261. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 3--5, 12--17, 21, 164, & 198. 1949; Moldenke, Phytologia 3: 130 & 131 (1949) and 3: 374. 1950; Deam, Yuncker, & Friesner, Proc. Ind. Acad. Sci. 59: 51. 1950; Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 4: 2209 & 2211. 1951; Moldenke in Gleason, New Britton & Br. Illustr. Fl., pr. 1, 3: 126, 129, & 130. 1952; Moldenke, Phytologia 4: 66 & 67 (1952) and 4: 185. 1953; Ahles, Bell, & Radford, Rhodora 60: 22. 1958; Moldenke in Gleason, New Britton & Br. Illustr. Fl., pr. 2, 3: 126, 129, & 130. 1958; Moldenke, Am. Midl. Nat. 59: 346--348. 1958; Moldenke, Résumé 5--7, 10, 15--19, 21, 22, 26, 223, 365, 366, 371, 375, 377, 378, 421, & 471. 1959; Moldenke, Résumé Suppl. 2: 1--3 & 11 (1960), 3: 2, 4, 5, 38, & 41 (1962), 4: 13 (1962), and 5: 1--3. 1962.

Illustrations: Moldenke in Gleason, New Britton & Br. Illustr. Fl., pr. 1, 3: 130 (1952) and pr. 2, 3: 130. 1958.

This is the common natural hybrid between Verbena hastata L. and V. urticifolia L., occurring wherever the ranges of these two very common species overlap, and with intermediate characters. It resembles V. urticifolia in habit, but the spikes are denser, not greatly elongate after anthesis, very sparsely and irregularly fruited, the flowers caducous, the mature calyxes mostly contiguous, the corollas small, varying from blue, pale-blue, violet-blue, or light-blue to lilac, pale-lilac, light blue-violet, pink, pinkish, lavender, purplish, purple-blue, lilac-purple, or pale clear-purple, caducous, and the tooting of the leaves coarser and often double. The stems, branches, inflorescences, and leaves are usually subglabrous or sparsely strigillose, but may sometimes be very hirsute. In general, one may say that it can be distinguished from V. hastata by its much more slender and loosely flowered spikes and the color of the corollas, and from V. urticifolia by its very sparsely fruited spikes, colored corollas, and narrow-elliptic leaves.

It is one of the commonest of all the natural hybrids known in the genus Verbena, occurring abundantly in the eastern and central United States and somewhat in the southern section. That insects should so often transfer the pollen from one to the other of the two parental species is rather amazing, since, although they grow most commonly together or in close proximity, they are so very different in general appearance -- V. hastata having very dense-flowered spikes of usually deep-blue flowers and V. urticifolia having very loose and lax distant-flowered spikes of white flowers.

It is worth noting here that the "Verbena hastata x urticifolia" of Gates, at least insofar as the herbarium specimens which he so annotated and which have been seen by me are concerned, is xV. illicita Moldenke.

The type of xV. engelmannii was collected by Carl Andreas Geyer at Beardstown, Cass County, Illinois, in July, 1842, and was designated V. urticaefolio-paniculata by Engelmann in 1844. It is deposited in the Torrey Herbarium at the New York Botani-

cal Garden. The Verbena alta foliis urticae, floribus dilute coeruleis spicatum in summis caulibus congestis of J. F. Gronovius (1762) seems to be this hybrid, but the pre-Linnean and Linnean synonymy which he gives apply to V. urticifolia L.

The type of V. paniculato-urticaefolia was collected by George Engelmann at Saint Louis, Missouri, in August, 1843. The type of V. hybrida Bicknell was collected by Eugene Pintard Bicknell (no. 7351) in Bronx County, New York, and is deposited in the Britton Herbarium at the New York Botanical Garden -- Mrs. Palmyra Mitchell has noted on the sheet in question that this name is preempted by that of "Vilm. Fl. de Pleine Terre Suppl. 95". The type of V. hastata x urticaefolia Blanchard was collected by William Henry Blanchard in Bennington County, Vermont, on August 11, 1902, deposited in the herbarium of the University of Vermont; that of V. hastata x urticaefolia Chase was gathered by Virginus Heber Chase (no. 3230) in Tazewell County, Illinois, and is deposited in the Britton Herbarium; that of V. hastata x urticaefolia Dutton was collected by Dura Lewis Dutton at Leicester, Addison County, Vermont, on August 7, 1915, deposited at the University of Vermont; that of V. hastata x urticaefolia McCoy was gathered by Scott McCoy (no. 4170) in Franklin County, Indiana, deposited at DePauw University; that of V. hastata x urticaefolia Norton was collected by John Bitting Smith Norton (no. 792, in part) in Riley County, Kansas, and is deposited in the herbarium of Kansas State College at Manhattan, mixed with xV. illicita; that of V. hastata x urticaefolia Peck was gathered by Morton Eaton Peck at Iowa Falls, Hardin County, Iowa, and is deposited in the herbarium of Iowa State College at Ames; that of V. hastata x urticaefolia Pammel was collected by Louis Hermann Pammel at St. Olaf, Clayton County, Iowa, on August 10, 1925, deposited at Iowa State College; that of V. hastata x urticifolia Eggert was gathered by Heinrich Karl Daniel Eggert at Saint Louis, Missouri, on August 4, 1875, deposited in the herbarium of the University of Texas at Austin; that of V. hastata x urticifolia Farwell was collected by Oliver Atkins Farwell (no. 1426) in Wayne County, Michigan, deposited in the herbarium of the Colorado Agricultural and Mechanical College at Fort Collins; that of V. hastata x urticifolia Perry was collected by Marcus Eugene Jones at Grinnell, Poweshiek County, Iowa, in August, 1875, deposited at Pomona College; that of V. hastata x urticifolia Pringle was gathered by Cyrus Guernsey Pringle at Charlotte, Chittenden County, Vermont, on July 15, 1887, deposited at the University of Vermont; and that of V. urticifolia x hastata Schneck was collected by Jacob Schneck in Harlin Riley's dooryard, Wabash County, Illinois, on September 1, 1897, deposited at the University of Illinois.

It is possible that the perplexing "Verbena diffusa Willd." ex J. Sm. in Rees, Cycl. 36: no. 18 (1817) may also represent this plant, which he says has "a near resemblance to V. urticifolia"

folia, with very small, somewhat purple, flowers". Rafinesque's V. incarnata may also belong here, but until I can see authentic material it is perhaps best not so to dispose of them.

Collectors have found xV. engelmannii in low ground and swampy or peaty borders, on creek banks and bottoms, in marshes, in door-yards and pastures, cow pastures and open ravine pastures, on canal banks and sandy black oak dunes, in clearings about landings, in marshy fields and ditches, on prairie strips and moist or dry banks, on the banks of field-draining ditches, along roadsides, in the vicinity of stockyards, and in low fields associated with Teucrium canadense L., Persicaria lapathifolia (L.) S. F. Gray, and Carex vulpinoidea Michx., in flower and fruit from July to October and in December. It has been found at altitudes to 2400 feet. Fassett states that he found it "in pasture with parents" and Shinnars encountered it on a "stream bank with parents".

Herbarium specimens have been misidentified and distributed under the names V. carolina L., V. hastata L., V. hastata f. rosea Cheney, V. hastata var. oblongifolia Nutt., V. officinalis L., V. riparia Raf., V. scabra Vahl, V. stricta Vent., V. urticaefolia L., V. urticifolia L., V. urticifolia var. riparia Britton, and "Verbena hybrid".

On the other hand, the Ewan 19083 distributed as xV. engelmannii is V. montevidensis Spreng.; C. C. Crampton 369, distributed as V. urticifolia x hastata, is xV. illicita Moldenke, and the Bogusch 969, similarly distributed, is V. scabra Vahl.

As is to be expected, collectors' labels record the common names of the parents for this plant, "blue vervain" and "nettle-leaved vervain".

Grimes considered his specimens, cited below, as a hybrid between "V. urticaefolia" and V. stricta, while Eggert identified some of his specimens as "V. stricta x urticaefolia" and his August 12, 1875, collection as "V. stricta x angustifolia". Schneck found the hybrid growing among both parental species in a dooryard and makes the comment that it "looks like V. urticifolia, but the flowers are more like those of V. hastata." Shafer also says that he found his specimens actually growing between both parents. Deam describes his plants as being wide-spreading, "almost as wide as tall", and states that his no. 41978 is actually only the lower branch of a very large plant. Bicknell describes his plant as "long and spreading 2 1/2 feet, surface of tube and throat within minutely puberulent, racemes flexuous, spreading and drooping, mostly 10 to 12 in. long, greatest spread of panicle 22 inches" and "rather more harshly hairy than V. hastata, leaves with more irregular and spreading teeth, flowers a little smaller and paler." Ahles found his no. 6581 in a pasture with both parents and V. stricta Vent. Pammel refers to the plant as "a weed". G. N. Jones describes his no. 22339 as 2 meters tall; Monachino says of his no. 579 "growing with V. hastata, but flow-

ers smaller"; Storm reports "plants not numerous, in about half acre of moist ground in stream bed." Bicknell 7353a consists of leaves only; these are very hairy and peculiar in shape.

The Grace 353 cited below has very hirsute stems and does not look much like most specimens of this hybrid. Norton 792 is a mixture with *V. illicita*, while F. A. Smith s.n. [July 1896] is a mixture with *V. urticifolia*. The Friesner 6450 collection is very close to typical *V. hastata*. His nos. 18613, 18618, 18619, and 18620 were all growing together, he says. Of these, 18618 is typical *V. urticifolia*, 18613 is typical *V. hastata*, 18620 looks much like *V. hastata* and had "blue" flowers, while 18619 has more distant "pink" or "pinkish" flowers. The last-mentioned was regarded by him as F_2 material. Gates records the hybrid from Crawford and Meade Counties, Kansas, while Deam and his associates report it from Fulton and Greene Counties, Indiana. It was apparently introduced into cultivation in about 1814.

Ahles, Bell, & Radford (1958) cite a Collector undesignated s.n. [bank of New River, Solitude P. O.] from Ashe County, North Carolina. The Walpole Island mentioned below is actually in Lambton County, Ontario. The specimen of F. Garner s.n. [Summer, 1925], cited below, bears a notation "W. F. K. Drawn, Mrs. Dickens, 1931", and is apparently the basis of an illustration not as yet seen by me. Iltis records the hybrid from Lafayette County and questionably from Milwaukee County, Wisconsin.

Miss Lulu O. Gaiser, in a letter to me dated February 1, 1960, makes the following interesting comments about this hybrid in Ontario: "Yes, the hybrid material had been so analyzed after my last (this) summer in the field. The *V. engelmannii* didn't 'click' until this summer, when I found the single plant of no. 2395W. The other one you saw, no. 1692W, was also a single plant and all I could find that day. But I had been looking for it all that day because I had found only the single plant, no. 1522W... on an earlier trip. You see, the very pale blue -- not purplish at all -- more sky blue color of each of these caught my eye. When I got this very rough 1522W I surely thought I had a species that was absolutely new to me (I mean, neither *hastata* nor *urticifolia*, and I never thought of the hybrid between the two). But after I got 1692W and then this year 2395W, with the same pale blue flower and the typical *urticifolia* inflorescence in the latter number, I thought 1522W was just another form of the same cross. Now your special comment about it seems very pertinent. *V. hastata* grows in low places, while this big tall rank specimen was picked off the top of the bank, so that as I drove along with the car, it towered its whole 5 feet (or about that) above me. The flower color was striking. I wish I could have found more of it. I looked for it again and found this 2395W this summer not too far from its location. They surely are only single specimens."

In all, 197 herbarium specimens, including the types of almost

all the names involved, have been examined by me.

Citations: ONTARIO: Walpole Island: Gaiser 1692W (Gp, Gp, Gp, Mm), 2395W (Gp, Mm). VERMONT: Addison Co.: Dutton s.n. [Leicester, August 7, 1915] (Vt). Bennington Co.: W. H. Blanchard 65 (N), s. n. [North Pownal, Aug. 11, 1902] (Dt, Vt, Vt). Chittenden Co.: Pringle s.n. [Charlotte, 15 July 1887] (Vt). Windham Co.: L. A. Wheeler s.n. [Townshend, 5/23/23] (Go, S). NEW YORK: Bronx Co.: E. P. Bicknell 7336 (N), 7348 (N), 7350 (N), 7351 (N), 7352 (Al, It); H. N. Moldenke 18463 (Aa, Ec, Jr, Jr, Ml, N). Nassau Co.: E. P. Bicknell 7353a (N), 7353e (N). Richmond Co.: Monachino 579 (N, Z). Tompkins Co.: C. H. Peck s.n. [Freeville] (Al). Ulster Co.: Elting 2074 (Al). NEW JERSEY: Morris Co.: Brenning s.n. [Lake Hopatcong, 4 Aug. 1902] (B); Mackenzie 4746 (N, N). PENNSYLVANIA: Allegheny Co.: Holz s.n. [Pittsburg, 1831] (S). Crawford Co.: Shafer s.n. [July 23, 1901] (Cm). Delaware Co.: F. W. Pennell 14695 (Cm). Luzerne Co.: J. K. Small s.n. [Lily Lake, August 15-16, 1889] (W--298653). Montgomery Co.: Wisner 535 (Up). Philadelphia Co.: Bassett s.n. [Pennypack Park, Oct. 5, 1927] (N). Union Co.: Westerfeld 2377 (Ur). County undetermined: Schweinitz s.n. [1829] (Br). MARYLAND: Washington Co.: H. N. Moldenke 21762 (Z). VIRGINIA: Princess Anne Co.: Fernald & Long 12453 (W--1971125). WEST VIRGINIA: Pocahontas Co.: C. B. Clarkson 1585 (We). Preston Co.: Bartholomew & Vail s.n. [Big Sandy Creek, August 15, 1959] (We). OHIO: Champaign Co.: E. C. Leonard 20462 (W--2006949). Lorain Co.: A. A. Wright s.n. [July 30, 1889] (Ob--75328). Lucas Co.: Moseley s.n. [Aug. 2, 1925] (Ob--97293). NORTH CAROLINA: Ashe Co.: Collector undesignated s.n. [Solitude P. O] (Hi--59476). ILLINOIS: Adams Co.: R. A. Evers 802, in part (Ur, Ur), 807 (Il--15901). Cass Co.: Geyer s.n. [Beardstown, July 1842] (T--type). Champaign Co.: Ahles 2911 (Ur, Ur, Ur); R. A. Evers 1604 (Ur); G. N. Jones 16761 (Ur). Crawford Co.: Ahles 4900 (Ur, Ur, Ur). Hardin Co.: Ahles 2754 (Ur). Henry Co.: V. H. Chase 6910 (Ur, Ur), 6911 (Ur). Iroquois Co.: Ahles 2538 (Ur); Winterringer 6452 (Il--33730). Jo Daviess Co.: Pepoon & Moffatt 254 (Ur). Piatt Co.: Ahles 6580 (Ur), 6581 (Ur). Sangamon Co.: G. D. Fuller 5271 (Il--15859), 5479 (Il--15866), 6585 (Il--15869). Stephenson Co.: Eggert s.n. [August 12, 1875] (I). Tazewell Co.: V. H. Chase 3230 (Al, Ca--882654, Il--15816, N, Ur, W--1897066). Vermilion Co.: Storm s.n. [July 28, 1949] (Ur). Wabash Co.: Schneck s.n. [Sept. 1, 1897] (Ur); Schneck & Waite s.n. [Mt. Carmel, Aug. 5, 1887] (Ur--30014). Winnebago Co.: M. S. Bebb s.n. [Fountaindale] (Al). INDIANA: Boone Co.: S. McCoy 5294 (Bt--51727). Carroll Co.: Ek s. n. [west of Burlington, 8-7-1941] (Bt--57641). Cass Co.: Friesner 6450 (Bt--14065). Clinton Co.: C. C. Deam 41978 (Dm, Mg--202).

Franklin Co.: S. McCoy 4170 (Dp--4662). Fulton Co.: Friesner 23110 (St). Hancock Co.: Friesner 18619 (Ca--882638, Gg--323905, N, N, Pl--153592), 18620 (N, N, We); S. McCoy 828 (Dp--4671). Putnam Co.: Grimes 2083 (Dp). Warrick Co.: C. C. Deam 29006 (In). IOWA: Clayton Co.: L. H. Pammel s.n. [St. Olaf, Aug. 10, 1924] (Io--115923). Hardin Co.: Peck s.n. [Iowa Falls] (Io). Johnson Co.: L. H. Pammel 708 (Io--119267, Mg--195). Lee Co.: I. Mitchell 172 (Io--115868). Muscatine Co.: Pammel, Kelso, & Harlan s.n. [Jul. 20, 1919] (Io--95044). Poweshiek Co.: M. E. Jones s.n. [Grinnell, August 1875] (Po--71239). Story Co.: J. R. Campbell 67 (Io--84561). TENNESSEE: Carroll Co.: Eggert s.n. [Hollow Rock, 4 & 5 Aug. 1897] (Cm, N, W--754370). MICHIGAN: Cass Co.: Pepoon 1347 (Mi). Oakland Co.: Farwell 5159 (Mi). Saint Clair Co.: Farwell 6741 (Mi). Wayne Co.: Farwell 1426 (Fc), 8461 (Mi), s.n. [Detroit, Sept. 25, 1893] (C); H. H. Rusby s.n. [Detroit, Aug. 1884] (Mi). WISCONSIN: Dane Co.: C. C. Albers 33015 (Au); A. B. Seymour 1062 (Ws). Grant Co.: H. H. Smith 7821 (B). Lafayette Co.: Shinners 2358 (Ws). Milwaukee Co.: Lapham s.n. [Milwaukee] (Ws). Vernon Co.: Fassett 20233 (Ws); H. H. Smith 7274 (B), 7366 (B). KANSAS: Bourbon Co.: Clothier & Whitford s.n. [Aug. 11, 1897] (Ka). Brown Co.: F. Garner s.n. [Summer, 1925] (Ka--72011). Cloud Co.: Carleton s.n. [July 18, 1888] (Ur). Linn Co.: Brooks & Brooks s.n. [1928] (Cm). Nemaha Co.: A. S. Hitchcock s.n. [Dec. 11, 1896] (Ka). Pottawatomie Co.: Kimball s.n. [St. George, Aug. 12, 1888] (Ka). Republic Co.: F. A. Smith s.n. [July 1896] (Ka). Riley Co.: J. B. S. Norton 792, in part (Ka, N, W--353583). MISSOURI: Greene Co.: P. C. Standley 8612 (W--687555). Marion Co.: G. N. Jones 22339 (Ur). Saint Louis: Eggert 5323 (N), s.n. [Mississippi Valley, Aug. 4, 1873] (N), s.n. [St. Louis, Aug. 4, 1875] (Au, B, Bi, Ca--181535, Ca--425200, Ca--882858, Cm, Cm, Du--202133, Gg--183218, Go, In, Io--79865, Mn--6885, N, Po--192591, Tl, Up--60775, W--754957), s.n. [St. Louis, Aug. 8, 1875] (Au, B, Ca--183180, Ca--425202, Cm, Du--202131, Gg--183216, Io--79868, Mn--6896, N, Po--192593, Up--60751, Up, W--754954), s.n. [St. Louis, Aug. 1875] (Up--60750), s.n. [12 Aug. 1877] (Al, I); Engelmann s.n. [St. Louis, Sept. 1841] (W--71971), s.n. [St. Louis, July 1843] (Dt), s.n. [St. Louis, Aug. 1843] (Br, Pr, Pr, T), s.n. [St. Louis, Aug. 1865] (Dt), s.n. [St. Louis] (Br, S, Sg--16097); Glatfelter s.n. [near St. Louis, 8-10-94] (Mi); s.n. [St. Louis, 8-11-94] (W--309644); Lindheimer s.n. [St. Louis, July 1839] (Dt); M. Martens s.n. (Br). OKLAHOMA: Kingfisher Co.: Grace 353 (Ok--19032). CULTIVATED: Spain: Herb. Hort. Reg. Matrit. 26 (Q). LOCALITY OF COLLECTION UNDESIGNATED: A. Murray 32 (S); Swederus s.n. (S).

xVERBENA ENGELMANNII f. ALBIFLORA Moldenke, Résumé Suppl. 3: 2, nom. nud. (1962), f. nov.

Haec forma a forma typica hybridae corollis albis recedit.

This form differs from the typical form of the hybrid in having white corollas.

The type of the form was collected by George Hill Mathewson Lawrence and W. J. Dress (no. 570) in marshy ground 2.4 miles west of Chip Bottom, Ocean County, New Jersey, on August 21, 1948, and is deposited in the herbarium of the University of California at Berkeley. It is described as a perennial 1 meter tall. Thus far the form is known only from the type specimen.

Citations: NEW JERSEY: Ocean Co.: Lawrence & Dress 570 (Ca--805325--type).

VERBENA EPHEDROIDES Cham., Linnaea 7: 260--261. 1832.

Synonymy: Verbena virgata Sellow ex Moldenke, Suppl. List Invalid Names 10, in syn. 1941 [not V. virgata Ruiz & Pav., 1798]. Verbena valerianoides St.-Hil. ex Moldenke, Alph. List Invalid Names Suppl. 1: 27, in syn. 1947 [not V. valerianoides H.B.K., 1818]. Verbena isabelleana Briq. ex Moldenke, Résumé Suppl. 1: 23, in syn. 1959.

Bibliography: Cham., Linnaea 7: 260--261. 1832; Walp., Repert. Syst. Bot. 4: 17. 1845; Schau. in A. DC., Prodr. 11: 543. 1847; Schau. in Mart., Fl. Bras. 9: 191. 1851; Lorentz, Veg. Nordeste Prov. Entre Rios, ed. 1, 86, 150, & 168. 1878; Griseb., Abh. K. Gesell. Wiss. Götting. 24: [Symb. Fl. Argent.] 276. 1879; Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 147. 1894; Jacks., Ind. Kew. 2: 1178. 1895; Briq., Ann. Conserv. & Jard. Bot. Genève. 10: 101. 1907; Glaz., Bull. Bot. Soc. France Mém. 3: 544. 1911; Seckt, Rev. Univ. Nac. Cordoba 17: 90. 1930; Herter, Florul. Urug. 105. 1930; Herter, Revist. Sudam. Bot. 4: 186. 1937; Moldenke, Suppl. List Invalid Names 10. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39, 41, & 101. 1942; Moldenke, Phytologia 2: 75, 87, & 115. 1945; Moldenke, Alph. List Cit. 1: 195. 1946; Moldenke, Phytologia 2: 336 & 338. 1947; Moldenke, Alph. List Invalid Names Suppl. 1: 27. 1947; Lorentz, Veg. Nordeste Prov. Entre Rios, ed. 2, 86, 150, & 168. 1947; Moldenke, Castanea 13: 117. 1948; Moldenke, Alph. List Cit. 3: 687 & 923 (1949) and 4: 1123, 1124, 1250, 1257, & 1288. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 13. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 94, 100, 106, & 198. 1949; Moldenke, Phytologia 3: 453. 1951; Stellfeld, Trib. Farmac. 19 (10): 166. 1951; Angely, Fl. Paran. 7: 12. 1957; Moldenke, Résumé 110, 119, 127, 378, & 471. 1959; Moldenke, Résumé Suppl. 1: 23. 1959; Angely, Fl. Paran. 16: 78 (1960) and 17: 46. 1961.

Bushy perennial or frutescent herb, to 1.2 m. tall, much branched, subaphyllous; stems, branches, and branchlets slender, rush-like, sharply 4-angled, margined, the alternate faces sulcate, glabrous and smooth, the branches and branchlets very numerous and spreading; nodes annulate, somewhat contracted; principal internodes 2.5--6.3 cm. long; leaves mostly rudimentary.